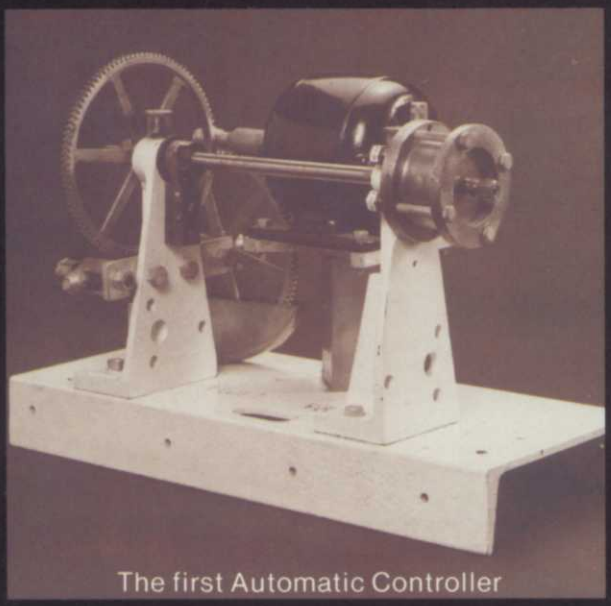
1978 Managers Guide to Equipment, Chemicals and Supplies

WEEDS TREES & TURF

ONE DOLLAR • SEPTEMBER 1977

EQUIPMENT:
How to maintain it and when to replace it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WEEDS TREES & TURF®

SEPTEMBER 1977, Vol. 16, No. 9

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TO OUR READERS

This month has been especially demanding. Compiling any lengthy directory would seem to be. We have added a new section, a chemical listing. I know there might be more chemical manufacturers out there than the ones we have listed. So before you sit down to write that irate letter, please realize first that there might not have been a way we could have known . . . excuses, etc.

Please do, however, inform us of the company name, address, chemicals or equipment it manufactures and what each is used for. The only way a directory can be perfect is to include everyone!

If you read thoroughly your last issue of WEEDS TREES & TURF, you will have noticed that this month's issue was to include the winners of the annual WEEDS TREES & TURF awards. This is not the case, however, as a time factor proved otherwise. You will have to remain in suspense another month.

This month the WEEDS TREES & TURF staff traveled to St. Paul and saw first hand some of the equipment and methods that are used to produce fine sod. See page 29 for more details and photos.

WEEDS TREES & TURF was also at the Rutgers field day in New Jersey. Many extensive experiments are underway there that are already benefiting the "Green Industry." The many experiments will continue to provide results that will benefit us in the future.

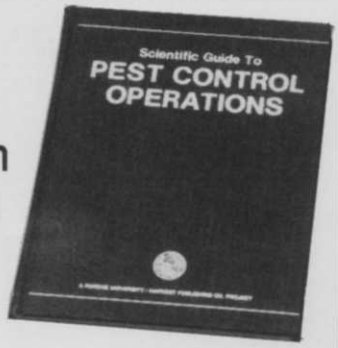
The feature story on page 14, you need to read. Mr. LeSieur did extensive research and talked with many turf managers about equipment. Read it and find out how the others do it.

And if you need a ground cover that is highly salt tolerant and requires little moisture, be sure and check out the "Corto" Australian saltbush story on page 46.

Ron Morris

Ron Morris
Assistant Editor

This book is the latest on pest control operations



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It runs through the briars, it runs through the brambles and it runs through the timber where a rabbit couldn't go.

If the British had used a Klearway at the battle of New Orleans, they could have beaten a hasty retreat and returned to face "Old Hickory" another day.

For any job, you must have the proper equipment. You certainly wouldn't try to cut through a jungle with a penknife. Although, some companies make a comparable error in their choice of right-of-way clearing equipment.

The Klearway was designed by Kershaw expressly for right-of-way clearance and forestry applications. It's not another machine modified to chop brush and push over saplings. The Klearway is built from the ground up to clean out heavy brush and light timber, leaving a clean swath of mulch on the first pass. Dual head cutting makes it faster than any other machine. The Klearway is dependable, boasting an excellent service record. Speed, efficiency and dependability are its hallmark, meaning profit.

The Klearway requires only one operator. The exclusive protruding dual blades coupled to twin flywheel disks mean unique ground-level cutting. The Klearway will clean up to three acres per hour with no damage to the environment or terrain. When you're working in swamps, Terra Tires,® the Klearway's equal weight distribution and 20,000-pound winch won't let you down. Caterpillar® V-8 power and full frame articulation cope easily with high hills and low bogs. For more information, write Kershaw Manufacturing Co., 2205 West Fairview Ave., Montgomery, AL 36108 or call (205) 263-5581.

KLEARWAY
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KERSHAW

Government News

Applicators living in states which have not passed laws requiring a pesticide certification program that complies with EPA standards will have their training and certification programs administered by a regional office of the EPA.

Applicators in this situation will have to keep records of how they dispose of pesticides and take examinations every two years to renew their certifications. Nebraska and Colorado will probably fit into this category, according to Andrew Ceraker, senior regional officer in the EPA's office of pesticide programs.

The chances are over 90 percent that prospective pesticide registration application will be rejected, according to Edwin L. Johnson, Deputy Assistant Administrator for Pesticide Programs of the EPA.

Johnson gave two basic reasons: 1) The applicant "cannot submit or cite data to fulfill the current requirements of the registration (Section 3) regulations; or 2) the data upon which (the applicant) wishes to rely is claimed to be a trade secret by the data developer, who refuses to let the applicant rely on the information."

The conditional registration and the Sections 10 and 3(c)(1)(D) amendments approved by the Senate Agriculture Committee were cited by Johnson as solutions to these problems.

The North Carolina Agriculture Department used a crisis exemption to apply methomyl. It was used in several counties to control outbreaks of the fall armyworm on coastal bermudagrass.

A rebuttable presumption against registration (RPAR) notice against pesticides which contain cadmium is about to be issued by EPA, according to EPA sources. The EPA Carcinogen Assessment Group (CAG) cited studies which show a "statistically significant increase" in the incidence of prostatic cancer deaths among alkaline battery workers who had been exposed to cadmium for at least one year.

In addition, the CAG report said that cadmium salts "increase the frequency of point mutations and somatic chromosome aberrations" and "interact with and break DNA" among other things.

If issued, the cadmium RPAR will be the first RPAR to be issued on a natural substance. The RPAR would involve 30 registrants and 35 products -- all fungicides for turfgrass applications.

The EPA has issued three section 5 experimental use permits to Fisons corporation to allow use of 2,2-dimethyl-1,3 benzodioxil-4-yl methylcarbamate on turf to evaluate control of turf insects in Calif., Ill., Ind., Kansas, Md., Mass., Nebr., N.H., N.J., N.Y., N.C., Ohio, Okla., Penn., and Texas. One permit allows use of 585 pounds of the pesticide on 308 acres, another allows 152 pounds on 76 acres, and the third also allows 152 pounds on 76 acres.

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Dependable **Ross Super TREE STAKES** provide once-a-year feeding of trees, shrubs, and evergreens with a high food value analysis of 16-10-9 PLUS iron and zinc formulation.

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12 or more cases, $25.00 per case
Each case includes
20 Nylon Pounding Caps

Your name_____

Organization_____

Address_____

City_____ **State**_____ **Zip**_____

Make check payable to Ross Daniels, Inc.

Industry News

First EPA restricted pesticides designated

The first draft of the EPA Decision Summary regarding classification of certain pesticide products for "restricted" use has been published. More will be added as EPA reviews more compounds. Nearly all of the products listed are restricted for all uses for all formulations and concentrations. They include Aldicarb, TEPP/Tetraethyl Pyrophosphate, Ethylene Oxide, Paraquat, Picloram, Hydrocyanic Acid, Aluminum phosphide, Acrolein, Allyl Alcohol, Carbon Tetrachloride, Acrylonitrile, Sulfotepp/Bladafume, Calcium Cyanide, Methomyl/Lannate, Sodium Cyanide, Mevinphos/Phosdrin, Fluoroacetamide/1080, Methyl Bromide, Demeton/Systox, Ethoprop/Mocap, and Phorate/Thimet.

Manhattan ryegrass royalties top $142,000

The Manhattan Ryegrass Growers Association has contributed over $142,000 to further research of grasses at Rutgers University, according to Bill Rose, president of the association.

Manhattan perennial ryegrass was developed by Dr. Reed Funk of Rutgers, and the royalty payments to that university have been a big factor in maintaining the level of research there.

Phosphate producers join Potash group

The Board of Directors of the Potash Institute has approved a new phosphate program that brings major U.S. phosphate producers into the organization and changes the name to Potash/Phosphate Institute.

The first phosphate producers joining the Potash/Phosphate Institute are Agrico Chemical Co.; International Minerals and Chemicals Corp.; Mobil Chemical Co.; Occidental Chemical Co.; Royster Co.; Smith-Douglass, division of Borden Chemical, Borden, Inc.; and Teasgulf Inc.

Basagran gets OK for nutsedge control

Basagran has recently been approved for supplemental labeling of yellow nutsedge (Cyperus esculentus) in commercial turf.

Basagran should be applied postemergence to nutsedge plants when they are actively growing. A second application may be made 10-14 days later if control is not adequate. Thorough leaf coverage is essential for maximum control and mowing should be delayed for 3-5 days after application.

In experiments at Ohio State University, Basagran gave excellent selective control. No phototoxicity occurred on desirable species where recommended rates were used.

NAA has slide/cassette programs available

The National Arborist Association has six cassette programs available. They are: Basic Instruction for a Tree Care Trainee; Climbing Techniques for the Professional Arborist; The Tools and Techniques of Pruning; The Reasons for Pruning; The Technique of Spraying; and Cable Bracing.

The cost of each slide/cassette program is $50 and may be obtained from the National Arborist Association, 3537 Stratford Rd., Wantagh, N.Y. 11793.

New Scleroderris identified in U.S.

A new virulent strain of Scleroderris canker has been identified for the first time in the U.S. The outbreak has been identified in nine counties in New York's Adirondack Mountain area, covering 34,000 acres. Tree mortality has exceeded 90 percent on 2300 acres. Serilogical work has shown that the new strain is identical to one present in Norway and Finland that has extensively damaged conifers in those countries.

The AAN has urged the Senate appropriations subcommittee on interior and related agencies to appropriate $200,000 for research aimed at the control and, if possible, eradication of the new strain.

Wasted time adds up to big money loss

Time is money and wasted time means wasted money. This is obvious when you consider the cost of one wasted hour per day for your employees. Assuming your employee works an eight-hour day, 40-hour week, with paid holidays and vacations, that wasted hour can add up to big money in a year's time:

Employee's salary:	Cost to employer
$ 5,000	$ 625
7,500	935
10,000	1,250
12,000	1,500
16,000	2,000
20,000	2,500
25,000	3,125
40,000	5,000
50,000	6,250

Dutch elm disease symposium planned

The National Arborist Association will sponsor a symposium, Nov. 9-10 at the U.S. National Arboretum in Washington, D.C. on the "state of the art" of Dutch Elm disease control. Twelve researchers will share the podium with six representatives from industry. Contact NAA, Inc., 3537 Stratford Rd., Wantagh, NY 11793

New program to focus on people

A new management training program called Professional Effectiveness Program for Garden Center Managers is being jointly sponsored by the American Association of Nurserymen and Garden Centers of America. As in AAN courses of the past, the program will continue to concentrate on things like accounting procedures, cost control, budgeting, advertising, etc., but will now focus on the management of people.

The program will teach an understanding of sound management concepts and the practical application of them to the garden center situation. It is designed for anyone in a garden center who manages people.

Enrollment is limited to 30 participants to permit a more in-depth treatment of the various subjects. More information may be obtained by writing to AAN Professional Effectiveness Program, Suite 230, Southern Building, 15th & H streets, N.W., Washington, D.C. 20005.

Rhodia expands turf care products

Rhodia Inc. Agricultural Division has expanded its Chipco turf care products line. It has received an experimental use permit for Chipco 26019, a new fungicide. The permit allows for the use of Chipco 26019 on dollar spot, brown patch and Helminthosporium.

Rhodia also expects to receive full registration of a preemergent contact herbicide, Ronstar G, by the fall for use on turf and ornamentals. Ronstar G controls crabgrass, annual bluegrass, goosegrass and other weeds in turf applications. In ornamentals, it controls a wide range of broadleaf and grassy weeds.

Asulox herbicide was recently approved by the state of Florida for postemergent control of crabgrass on St. Augustinegrass and Tifway 419 bermudagrass on golf courses and sod farms. Asulox has been used for some time for postemergent control of grassy weeds in Florida sugarcane, roadsides, rights-of-ways and other areas.

Roundup receives EPA registration approval

Roundup herbicide has received Environmental Protection Agency registration approval for turfgrass applications, according to Monsanto Company. Roundup may now be applied, by professional applicators as specified on the label, to actively growing weeds before renovation.

Three new perennial weeds — napiergrass, silverleaf nightshade and wirestem muhly — have also been added to the Roundup label.

Research at Purdue University by Dr. W.H. Daniel and Jeff Kollenkark has determined that complete kill of annual and perennial weeds could be expected in approximately 10 days at the recommended rate of one to two pounds active ingredient per acre.

Roundup is inactivated once in the soil and has no effect on seed germination. New weeds may also germinate and infest the site. Because of this it is recommended that renovation be done in early fall. This also allows the turf to reach adequate mowing height before snowfall.

It is further recommended that water with soil or iron in it be avoided when using Roundup as either can inactivate the glycophosphate.

GCSAA expands and forms new departments

The Golf Course Superintendents Association of America (GCSAA) has put into operation a new department and expanded an existing department. The new Department of Chapter and Industrial Relations will promote the growth of the GCSAA conference and show. It will also handle chapter relations and recruit new memebers. James R. Brooks, who has been director of membership services since 1974, is the director of the new department.

The Membership Services Department has been expanded to become the Department of Membership and Administrative Services. Its director is Janie Storm, formerly administrative assistant to the executive director since 1975. Storm's department will provide essential administrative functions for the headquarters office and perform all service for members, including Employment Referral Service, audio-visual services, membership applications, reclassifications and terminations, data processing, circulation for the association magazine and registration for both the show and all educational sessions.

Ryan production moves to Lincoln

Production of Outboard Marine Corporation's Ryan institutional turf maintenance line is being moved from St. Paul, Minn. to Lincoln, Nebr. The gasoline-powered Ryan line, ranging from sod cutters to lawn aerators, will be manufactured at the corporation's 500,000 sq. ft. Cushman plant.

"The consolidation of our Ryan and Cushman manufacturing operations will enable us to hold the line on production costs, while enabling us to remain price competitive in the turf and industrial marketplaces," commented Herbert A. Jespersen, division manager and corporate vice president.

Toro sells two distributorships

The Toro Company has sold its branch distribution operations in the Cleveland and Pittsburgh metropolitan areas, according to Toro president David T. McLaughlin.

The name of the Cleveland organization will be changed to Schaefer Turf & Irrigation Co. and will continue to be a full-line distributor, handling all Toro consumer, turf and irrigation products.

The Pittsburgh distributorship will be known as Allegheny Toro Distributing, Inc. For Toro, it will handle only consumer products.

The two sales leaves Toro with three company-owned distribution centers serving Los Angeles, San Francisco and greater New York.

People on the Move

Richard C. Pedersen is vice president, technical affairs for Jacobsen Manufacturing Co. He was formerly director of engineering for Jacobsen's Turf Products division. Pedersen will be responsible for managing product quality, safety, legal and environmental requirements, as well as engineering policies, procedures and standards. He will also be responsible for product liability, patent activities and new product technology. Pedersen is a Registered Professional Engineer.

Al Palladino has been appointed field sales manager for Melnor Industries. He will be responsible for the sale of Melnor products throughout the U.S. and will direct the activities of Melnor's regional sales managers and representatives.

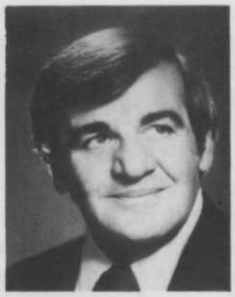
Erling D. Schmidt has been named manager of engineering planning and construction with ICI United States central engineering department. Since joining the company in 1975 as senior project manager, Schmidt has been responsible for building and opening the company's $70 million paraquat herbicide plant at Bayport, Tex., scheduled to open in late 1977.

James Walsh, MacFarland Co., Harrisburg, Pa., has been elected president of the Horticultural Research Institute. New vice president is **Robert Siebenthaler,** The Siebenthaler Co., Dayton, Ohio. **John Flemer,** Princeton Nurseries, Princeton, N.J., is the new treasurer, and **Robert Voorheis,** Blue Ridge Nurseries, Kansas City, Mo. will serve on HRI's Executive Committee.

Ed Shoemaker has been named director of sales and marketing for the turf division of Rain Bird. He has been with the company for 19 years, joining as an irrigation engineer in 1958. Shoemaker will be responsible for all market planning, product development and sales for the turf irrigation market in the U.S. Shoemaker has served on the Board of Directors of the Irrigation Association and is currently a member of the Industrial Advisory Council of the Golf Course Superintendents Association.

Monsanto Agricultural Products Co. has named **Walter P. Hobgood** as product manager for Roundup herbicide, non-crop. Hobgood joined Monsanto in 1973, and has most recently held the position of supervisor, market research, in the crop chemicals division.

Budecki


Palladino

Pedersen

Shoemaker

Tharrington

Jack Welch is product manager of fertilizer and grass seed at Lakeshore Equipment & Supply Co. Welch formerly served as regional manager in the ProTurf division of O.M. Scotts and most recently as manager of the professional turf products department for Northrup, King & Co.

Williams H. Tharrington has been appointed product manager, agricultural engineering, by Stauffer Chemical Co. Tharrington is responsible for basic and applied systems engineering relating to the application of agricultural pesticides. He is also involved in various planning aspects aimed at improving new and existing products and coordinating advertising and sales.

Edward F. Mulcahey has joined Wilkie Turf Equipment Co. as marketing manager, turf and irrigation products. **Charles Kemp** has been named manager, irrigation department and **Kurt Kraly** has been promoted to manager, golf course and irrigation contractor sales.

Robert K. Bernard has been appointed as sales representative for agricultural chemicals for Rohm and Haas Company's central district. He will be responsible for western Minnesota and the Red River Valley of North and South Dakota. Prior to joining Rohm and Haas, Bernard was manager of the soil service center at the Farmers' Union Central Exchange, St. Paul, Minn.

Robert M. Budecki has been named manager, walk-behind products for the Simplicity Manufacturing Co. He will be responsible for planning and implementing changes to the company's lines of walk-behind mowers, tillers and snow throwers. Budecki joined the company in 1972 and has most recently served as national accounts manager.

Marvin M. Schreiber, research scientist with the USDA's Agricultural Research Service at Purdue University, has been named president-elect of the International Weed Science Society (IWSS).

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EQUIPMENT: How to maintain it and when to replace it

by Harold LeSieur

Harold LeSieur is the principal of his own management consulting firm in Santa Maria, Calif. He holds an M.S. degree in engineering from the University of Southern California and an M.B.A. degree from Stanford University.

Many turf professionals "depend upon their equipment, but don't treat it like they depend upon it" is the shrewd observation of an experienced equipment company service manager. Yet, imagine a total mower failure during a major golf tournament, or even a shabby putting green during a heavy weekend of play—all for lack of a mower part. Effective preventive maintenance is the answer, of course, but when this is no longer economically justified, equipment should be replaced without delay. Nice in theory, but this does not happen very often, even for affluent golf clubs or well-budgeted cities.

What is the answer? Without systematic programs of maintenance and replacement, your equipment is "Soon worth only what it weighs", says Joe C. Judd, Los Angeles City Parks Chief Maintenance Supervisor. But if you "learn the truth" about your equipment, he adds, and install meaningful

Superintendent Don Lokey of Valley Club in Montecito, Calif., illustrates mechanism of Toro sand trap rake, awaiting repair in his shop.

Superintendent Lokey displays spray tanks adapted for use on Cushman scooter and mounted on jacks for easy loading.

replacement and maintenance programs, you may be in for some pleasant surprises!

Preventive maintenance pays off

Imagine a simple adjustment to reel bearings on a Toro Greensmaster III, requiring 5 to 10 minutes per cutter, becoming an $800 plus job because all three cutting units were damaged beyond repair. Between an operator failing to disclose a "floating reel", and a mechanic who did not bother to check, this equipment continued to mow 5 days per week until it self-destructed. And not at some under-budgeted, small course but at a "prominent, exclusive" club in Southern California. On the other hand, consider a California college operating a Toro Superpro which broke down every year for 5 years, then went 2½ years without missing a mowing schedule or needing a major repair. The difference? A matter of preventive maintenance in the second case, according to Service Manager John Johnston of Toro Pacific Distributing Co.

Nor is this problem limited to golf courses. Foreman Leo Nichols of Ventura County in California tells of a large Yazoo riding rotary mower brought into his shop for replacement belts. An alert mechanic found also two bad bearings, adjusted the steering mechanism and replaced a defective battery cable and spark plug. This mechanic is instructed to go over such equipment "each time for all possible defects", and so he did. "We don't want any surprises for our operators," says Nichols. "If the equipment in our shop is not ready to use when it leaves, my people will hear about it," he adds.

"A half-day job costing $50 can easily lead to a week's downtime with a $300 pricetag", explains Toro's Johnston, "simply because communications are bad and preventive maintenance is neglected". Operators tend to let equipment get dirty, he continues, "and 18 pounds of grass hung-up may be hiding 18 grease fittings". This is where damage will occur, Johnston adds. In his estimation, a piece of equipment "will operate about as it looks". Thus, 8- or 10-year old equipment which is clean and sharp will probably operate better than 3 year-old machines which have been neglected. With this philosophy in mind, Johnston claims Toro "goes overboard" on its warranty program—even after 2 years on a one-year warranty—providing the customer has taken "exceptional care" of the equipment.

What constitutes exceptional care is probably included in Johnston's recommendation to put away equipment each night in a "semi-storage state". This he defines to include washing, drip-drying, flushing and lubricating bearings, "eyeballing" for loose fasteners and repairing as needed. He especially advises operators to listen for bad bearings or other suspicious sounds, and report them to a mechanic. If equipment is stored with moist and contaminated bearings, as during the common 3- or 4-day weekends, corrosion pitting will commence. It

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is small wonder, then, that working this equipment a full day without lubrication can lead to early failure.

By comparison, there is little difference between the recommended Toro Pacific preventive maintenance procedure and that of Lakeside Country Club in North Hollywood. Small additions include superintendent Eichner's recommendations to replace expendable parts, (chains, sprockets, belts) before failure; a minor tune-up of engines; plus sharpening and adjusting reels. To this he adds checking mower bearings for end play — an adjustment requiring only a "few seconds" that can easily save early bearing replacement.

There is a right way and a wrong way to change oil, and a better way to insure correct greasing! Oil should be changed only when hot, advises Toro's Johnston, since contaminants picked up by oil will not remain suspended when oil cools. Again, he cautions to wipe off the oil filter before opening or closing, to avoid debris collecting in the oil. Oil changing on air-cooled engines is doubly important, Johnston cautions, since these engines run hotter and are not equipped with oil filters. As for greasing, reverse the usual order of greasing, attending first to those fittings commonly neglected — the hard-to-get-to ones. To accomplish this, use a color coding system, with "code" recorded on underside of engine hood. For example, all fittings due for daily greasing can be designated by a yellow marking; all scheduled for weekly attention by a green coloration.

Some equipment or components can best be described as "self-destructive," so high is their maintenance. Examples are gears and chains exposed to water and dirt, requiring constant replacement. To this list, Larry Bicking of New-Castle County, Del., adds hand-operated tools such as chain saws, rotary push-type mowers and the Weed Eater. Eichner of Lakeside Country Club nominates as the highest maintenance item of all, per hour of operation, the aerifier. On this he claims "universal agreement," and describes his own maintenance procedure: Once per year, open cam case and replace followers (if indicated); next year, repair externals, including rod bearings and rod slide bushings. "Our machine destroys itself as it operates," he says, not unlike an automobile engine operated upside down and with no crankcase! However, results are so essential to maintaining healthy turf under traffic, "we put up with it."

People relations key to preventive maintenance

Few would disagree with Bob O'Link Golf Course superintendent Robert W. Williams of Lake Forest, Ill., that preventive maintenance is the "cheapest, best way to go." This requires, he adds, "daily attention to machines used daily." Well and good, but there are really two "answers" to equipment longevity, according to Al Noble of B. Hayman Co. in LosAngeles. "First in importance is a motivated operator, followed by good preventive maintenance." And how to get the "man in the field" to take care of his equipment is often over half the problem.

"If we could consistently get the man in the field to take care of his equipment, this would go a long way," according to maintenance supervisor William Mc Kennrick of Los Angeles County. In this statement, he includes regular lubrication and oil changes, together with attention to "picking up bottles" before they can break blades and ruin mowers. How can this be accomplished?

Inspiring a "That's my machine" pride in each operator by "locking" each employee to a specific piece of equipment is the successful method used by the Valley Club's Don Lokey in exclusive Montecito, Calif. Even more specific is the method used by Ventura County's George Lawhead and Leo Nichols, wherein each employee is assigned to a specific item of equipment, and given two hours each Friday for the "get ready for Monday" ritual. This consists of an oil change, lubrication, filter cleaning and a hunt for loose nuts and bolts, as well as more serious attention (as needed) by a professional mechanic.

On the same theme, with a clever variation, is the scheme used by superintendent Richard Eichner of the Lakeside Country Club. All operators are recalled from the course one hour early, every other week, on — yes, on pay days: And who forgets a pay day? While washing and oil additions are daily responsibilities of operators, this biweekly routine insures a regular oil change and systemic check on mechanical problems, advises Eichner.

Getting the most from your men, by establishing good communications and confidence, is the approach favored by Lokey of the Valley Club. "It takes time to build this confidence," says Lokey, "but there are few who will not respond." Working on a daily basis with his foreman on preventive maintenance, Lokey admits that periodic "jogging" of his men is necessary. However, rather than hurt a man's pride, he finds that a compliment to one soon leads others to follow suit.

It helps communications for a worker to know that he is not going to be fired if he damages equipment. As an example, Lokey cites one of his men who "froze" and drove a tractor over a 15-foot embankment from a wet, steep hill. When free from this fear, workers will be more willing to report equipment out of order, rather than just park the faulty machine and "disappear." As expressed by Toro Pacific's John Johnston, the "I didn't do it" psychology can only be overcome by constant attention to two-way communications between the superintendent, mechanic and operators.

Of course, it's not all that easy when available labor is unfitted or unskilled. A shortage of qualified mechanics is one problem. Another is the hiring sometimes, under many civil service systems, of unqualified help. Thus, passing a written test may still not insure mechanical aptitude. "When you get a good man, hang onto him" is the sensible advice of Los Angeles County's Bill McKennrick. Again, at Newcastle County, Del., a unionized shop sometimes forces superintendent

Superintendent Richard Eicher instructs operator of irrigation service vehicle at Lakeside Country Club in North Hollywood, Calif. A Cushman flat bed cart has been equipped with service box, sprinkler rack, pipe vise and air tank.

Howard Turf-Quaker aerifies turf at Lakeside Country Club. Equipment consists of tractor-towed rototiller with slicing reel.

Larry Bicking to use inexperienced people acquired by promotion or transfer. Thus, a back hoe operator or sewer tile man from Public Works may not be well suited to operating a large mower on Newcastle's stadiums and golf courses. Bicking estimates, for example, that problems with 40 percent of the mowing equipment brought into his shops could have been averted by better equipment knowledge and preventive maintenance.

Another problem is salaries too low to attract competent people. Then, misuse of equipment becomes common, according to superintendent Ed Dembnicki from the Country Club of North Carolina in Vass, N.C. "When salaries are so low, it is hard to find men who take pride in their work and can be motivated." Dembnicki is at least blessed with a competent mechanic.

One happy answer to some of these problems is the hiring of female operators. Women, it seems, have proven they can drive well and will follow instructions and precautions. As explained by Al Noble of B. Hayman Co. in Los Angeles, females don't have to prove male "macho," and will take fewer chances while driving and care for their machines as instructed (and not blow seals while lubricating!). Taking a cue from superintendents who have had success with women in turf work, "Rich" Eichner of Lakeside Country Club plans to add separate women's facilities in his new 50 percent shop expansion.

In the last analysis, "heads up" supervision is still the most important answer to results through people (and excellent equipment maintenance as a result). A shortage of Grade A superintendents is one complaint heard from the ranks of equipment suppliers, but attentiveness to the job is even more important. One example will illustrate the point. At a prominent course in Southern California, five 7-gang mowers were purchased between 1965 and 1975, because reels and side plates were consistently broken. Reason: Operators were fording rock-strewn creek beds (an 18-hole "finger" course) without declutching reels or lifting arms. This example of "flat abuse" was licked by purchase of a hydraulic mower, with easy-to-lift arms and reels. Needless to say, supervision had to be "jacked-up" as well.

At a time when skilled labor costs are escalating more rapidly than equipment prices, a premium is placed on sharp supervision. An amusing story is told of a prominent course in San Luis Obispo, Calif., whose "no nonsense" superintendent demanded that his men take care of their scooters. When overtaken by this alert professional, an operator who was "drag racing" his scooter was summarily sentenced to walking the course for 30 days! And after 13 years, the same transportation equipment is in daily use, "and good operators have resulted."

By taking "all hands" into your confidence, superior results can be your reward. As explained by golf course supervisor Neil Beeson from the City of Anaheim, Calif. (home of famed Disneyland), "Operators can make or break a piece of equipment." Before any such equipment is purchased at Anaheim, all concerned must be consulted, and this includes actual operation by the rank-and-file employee. If the operator's recommendations are not followed, supervision feels obligated to explain exactly why.

Precisely the same procedure is followed at famed Forest Lawn Memorial Parks in Southern California. Manager of grounds maintenance Robert Davidson explains that, before purchase, equipment must be driven by actual operators on the steep slopes of Forest Lawn's main park. This provides not only better input to the final decision, but

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helps to win the cooperation and interest of operators in their equipment. This is valued, considering the hazards and abuse mowers encounter in the unique and difficult environment of steep cemetery hillsides.

"Don't be afraid to ask dumb questions. They're easier to handle than dumb mistakes." This bit of advice hangs as a sign over the shop bench in the County of Ventura's landscape maintenance headquarters. This attitude, spelled out in actions as well as words, should go a long way toward winning worker cooperation in effective equipment maintenance.

"So you think you have problems?"

If you think your turf equipment is subject to abuse, just consider the difficult situation with cemeteries. Especially is this true with Forest Lawn and Mt. Sinai Memorial Parks, lying astride mountainous Griffith Park in North Hollywood, Calif. "Endlessly rattling over bronze or stone grave tablets does our equipment no good," says Grounds Maintenance Manager Robert Davidson of Forest Lawn. Not only this, but machines at both cemeteries must operate continuously on grades of 30 percent or better, often on wet grass, and with constant stop and go operation during visitation hours. To compound the problem, stones from freshly dug graves and loose wire, sticks and glass vases from flower arrangements are often lost until discovered by a mower operator! Or until the teeth of a turf aerator are broken off.

Superintendent Al Dennis of Mt. Sinai estimates such treatment shortens the life of his equipment by at least 20 percent, and causes "nothing but high repair bills."

To remedy this problem, Forest Lawn professionals literally rebuild a standard 76-inch mower, and "give back" some $1,300 worth of gear to the vendor on a $3,000 machine. This includes the sit-down sulky, since safety requires the mower be remodeled into a stand-up machine with trailer in rear. Then, a customized steering gear is added to suit each operator's height, dual rubber wheels may be added, a hand emergency brake and kill switch installed, and the reels and frame "beefed up."

If Forest Lawn officials could buy this type of equipment, or at least more rugged mowers, they might gladly pay an extra $1,000 for a 5-gang mower costing $4,600. Most of these, observes Davidson, are manufactured for mowing bent- and bluegrass on golf courses or median strip grasses to a depth of 2 inches to 6 inches, not Kikuyu grass to ¾ inch on on such steep slopes. "And they can't understand why their machines won't work," adds Davidson.

To be sure, memorial parks do not have a corner on difficult equipment problems. Consider operating mowers on a slope of the Rocky Mountains, with a total fall of 350 feet in little more than one mile. "We have tipped a few mowers over," reports Broadmoor Golf Course Director Charles Clark, "and our National mowers take a real beating in only 2 years."

A more usual situation is the maintenance shop located remotely from any golf course. Lack of a blacktop road to such a shop, even if only a quarter mile away, increases wear by an estimated 20 percent. Another common problem for municipalities, reported by Larry Bicking of Newcastle County, Del., is the "pooling" of turf equipment. In this case, where machines are not assigned to individual operators, equipment may be treated with less respect and be much more subject to abuse.

Speaking of unusual examples of heavy wear and maintenance, the cleaning of seaweed from beach sand by the Huron-Clinton Metropolitan Park Authority of Detroit has to be unique. Director David Laidlaw describes a converted potato and bean digging machine which picks up a 6-foot swath of seaweed and sand, conveying the mixture by belt and separating by rough screening. This machine is towed by a tractor and is subject to heavy wear from the sand and high maintenance requirements. The same is true for a separate tractor-towed trash pickup trailer.

"East is East, West is West"

Interesting regional differences exist in maintenance practices between courses, based on three months of heavy winter weather in the East and up to 363 days per year of playing time on the West Coast. "Our course is closed only on Yom Kippur each year," explains Superintendent David Mastroleo of the Hillcrest Country Club in Southern California. "We mow our fairways like crazy all spring and summer," he adds. Consequently, equipment on California courses is used continuously and must be repaired "on the run," in his words. Having worked at Arrowhead Country Club and Addison Golf Club, both in Illinois, Mastroleo is qualified to note the differences between eastern and western maintenance practices.

Each winter, an eastern or midwestern golf course will typically go through its equipment thoroughly, repairing and repainting. Engines will be torn down, if needed, gears will be checked, then bearings and bushings replaced. Even Colorado Spring's Broadmoor Golf Course, considered the "Far West" to many Easterners, undertakes its heaviest rebuilding and repainting jobs when the "frost is on the ground." Again, bermudagrass goes dormant from November to mid-March in California, often accompanied by rain (except under present drought conditions). Consequently, Forest Lawn Memorial Parks uses this period to rebuild its mowers, since bermuda is its principal turf grass.

Even further west, Lokey of Montecito, California's Valley Club prefers the January-February "frost" period to pull down motors, regrind reels and generally to anticipate bearing and other jobs which could "hold up the show" in summer weather.

In one sense, the luxury of warm weather may tempt some to neglect their equipment. Bob O'Link's Robert Williams notes eastern clubs all keep their equipment inside. Not so in the South, especially Florida, and in California. Here he observes open

Chief Maintenance Supervisor Joe C. Judd illustrates operation of sod cutter to Central Storeroom Manager Howard. A backlog of new machines, purchased under engineered equipment replacement program, is kept at this Los Angeles City facility.

Superintendent Richard Eichner inspects greens mowers lined up for repair in machine shop of Lakeside Country Club.

equipment sheds, and equipment sometimes left to rust. Does this practice unduly hasten the need for replacement, he asks?

Replace or repair?— THE BIG QUESTION

To replace or to repair? That is the question. And there is no one answer, even for the same class of equipment, since each user has a different problem.

To illustrate the divergence possible, we need but consider two large governmental units in the same area, namely the City and County of Los Angeles.

Los Angeles City has gained some reputation for its turf maintenance equipment replenishment program. This emphasizes prompt replacement of on-line or high frequency use equipment, according to engineered standards of life expectancy. Under this program, triplex and 30-inch mowing units are removed from front-line service promptly after 4 years, to a standby or low-frequency use. Chain saws and edgers are retired after only 2 years. The results, according to Chief Maintenance Supervisor Joe C. Judd, have been a better job, newer equipment to work with and less cost in the long run. There is now less temptation for supervisors to "squirrel away" extra mowers. Further, careful accounting of equipment has actually permitted Judd to set up a "spare and loan equipment program" with the same equipment inventory. Needless to say, equipment distributors such as Toro Pacific are very fond of the L.A. City program!

At the other extreme is Los Angeles County, which Toro Pacific's Johnston rates as having the "best parts department in the country and a shop second to none." Here the emphasis is on "keeping equipment until it begins to cost money," and probably well beyond.

Nor is Los Angeles County alone in this approach. In the very same area, the City of Los Angeles School District maintains two separate repair shops, to service mowers, tractors, sprayers and other equipment used in its 700 square-mile maintenance territory. "We have to live with our equipment longer than we like," says James H. Lane, gardening technical supervisor. Operating under a predetermined dollar budget, equipment used 10 to 15 years is not at all uncommon. "We may buy a piece of equipment two times over," he explains, "really beyond the point of economic feasibility to repair." A good preventive maintenance program helps to compensate for this policy, and this school district hires four travelling equipment repairmen to make minor repairs. Larger jobs are picked up by truck and transported to one of two central machine shops.

Even prestigious golf courses have had the problem of antiquated equipment to overcome. Both superintendent Terry Bucken of the Riviera Country Club in Pacific Palisades, and Don Lokey with the Valley Club of Montecito, both in California, speak of replacing high maintenance, "museum"-type equipment. In fact, Lokey proudly displays a gear-driven spray rig from the 1920's, no longer in use but recalling memories of a steam cal-

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liope.

There are really only three basic approaches to equipment replacement, according to Robert Davidson, manager of grounds maintenance for the largest of Forest Lawn Memorial Park cemeteries in Southern California. Thus, one can (1) replace equipment after a set number of years (say, 5 years average), or (2) replace when maintenance becomes too high, or (3) "work over old machines to keep them running." This, he admits, is the Forest Lawn approach, partly because of the difficulty in "getting the weak points worked out." With steep hillsides to contend with, plus stop and start mowing over rugged terrain Forest Lawn finds it necessary to rebuild mowers to its own specifications.

Still another municipality which must use equipment "typically to the breakdown point" is the City of Norfolk, Va. Like California, Norfolk has a temperate, long growing season, so that tractors and mowers are in constant use. Responsibility for maintaining 4,000 acres of turf, Parks & Recreation Director James Colley believes down-time would be reduced, and performance increased, if most equipment were replaced at least one year earlier. At Norfolk, Colley explains, the Central City garage must "sign off" on all existing equipment, certifying it as "beyond repair."

Assuming a reasonable equipment replacement program stands a chance at your institution, what kind of service life does experience show to be possible? This one needs to know in setting up a budget and depreciation schedule, a procedure lauded by such oldtimers in the golf superintendent business as Art Twombley of the Bel Air Country Club near Beverly Hills, Calif. and GCSAA past president Bob Williams of the Bob O'Link Golf Club in Lake Forest, Ill. For a walking green mower costing approximately $1,000, Twombley considers 4 to 5 years of life "about it," if the machine is run daily. Other estimates may vary from this. At the City of Anaheim, Calif., golf course supervisor Neil Beeson (who teaches equipment maintenance at a nearby college), rates the practical life of greens mowers at only 3 years, although his city programs a 5 year life. Famous Broadmoor Golf Course in Colorado Springs, places a 3 year schedule on their mowers. "After this," says superintendent Tommy D. Anderson, "we may move this equipment down and use as a tee mower."

Walt Disney World in Florida follows the University of Florida's Extension Service recommendations of 3 years life for riding-type greens mowers and triplexes, and 5 years for fairway and rough mowers. Superintendent Larry L. Kamphaus adds that one-cylinder machinery is replaced in less than 3 years, as vibration and metal fatigue soon wear out such equipment.

Many equipment replacement decisions can be made as a matter of "common sense," without the benefit of formulas. In fact, formulas are seldom used in actual practice, although espoused by some equipment manufacturers. On small equipment, selling new for under $200, such facilities as Mt. Sinai Memorial Park in North Hollywood or Bob O'Link Golf Course in Illinois simply discard such equipment after two years' use. Thus, there is no sense in buying a new $50 or $60 motor for a rotary trim mower costing only $60 to $85 in the first place. On the other hand, a $700 motor replacement in a $3,000 to $3,500 Cushman Truckster is well worth considering, feels Bob O'Links' Bob Williams.

More mundane equipment, such as diesel tractors, may last from 5 to 10 years, and spreaders or renovators even "indefinitely." Twombley of the Bel Air Country Club expects no maintenance at all for the first 10 years from a Massey Ferguson diesel tractor with bucket loader and excavator. For most equipment, however, he complains, "Manufacturers are not building machines like they used to," thinking of his 1947 Buick which lasted 120,000 miles "without the head off."

Forest Lawn's Supervisor of Mechanics, John McKinney, agrees with this observation, adding that today's turf equipment engines have a "built-in" obsolescence. After 400 operating hours, he says, they begin to have problems. McKinney admits, however, that running even an automobile engine 100 percent of the time on a slant would soon wreck it.

Neil Beeson from the City of Anaheim, California is somewhat more generous in his estimate of engine life than the Forest Lawn people, probably based on his experience with less severe environments. Beeson offers a useful formula for operating costs:

Year 1) Low maintenance, excepting for accident or other major problem.
Year 2) 2 times cost of Year 1
Year 3) 3 times cost of Year 1 (or 1½ times Year 2).

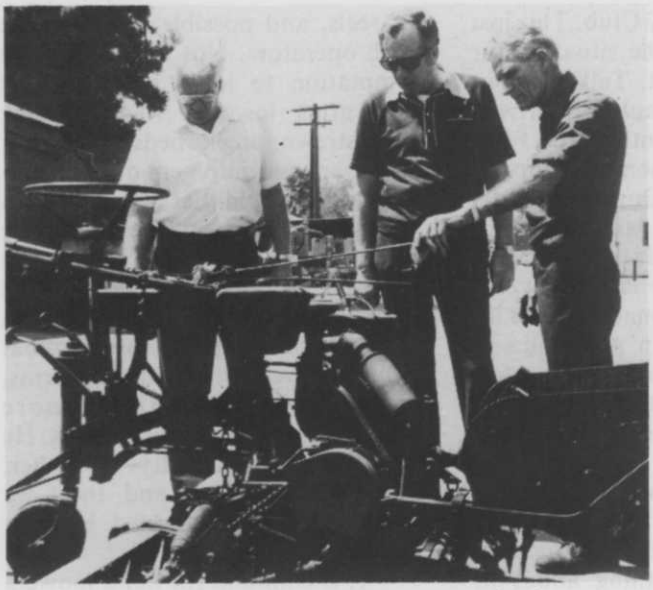
After the third year, Beeson explains, engines will probably need all new bearings, bushings and rollers, and total engine life will approximate 1,500 hours, for the environment of Anaheim's golf courses.

Of course, there is always the grey area between complete replacement and simple repair, where one can profitably rebuild equipment. Some professionals prefer this, or are forced into rebuilding by a diehard greens committee. Superintendent "Rich" Eichner of the Lakeside Country Club considers in-house engine rebuilding a "loser". He has had two tractor engines rebuilt on the outside, and bought fitted blocks for in-house replacement of trap edgers and trimmers. But Eichner is happy for a switch to diesel engines. Now he needs only new injectors and injection pump adjustments, although he acknowledges fuel injectors require outside specialists and he prefers outside help for a major tune-up yearly.

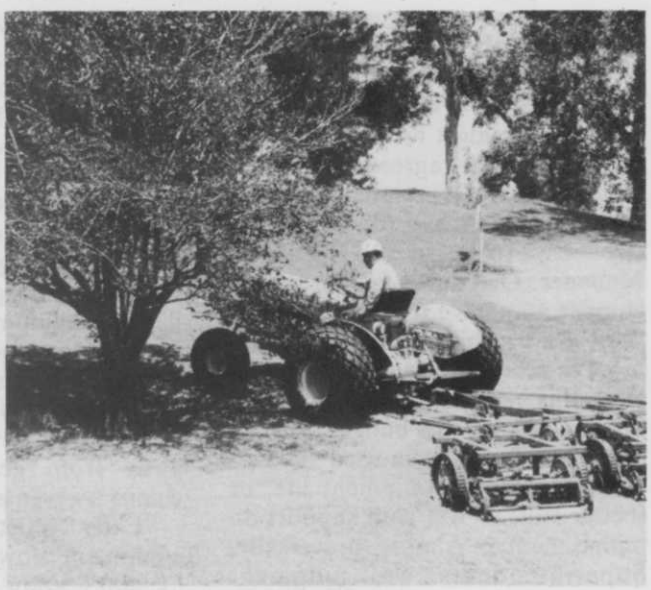
In contrast, David Mastroleo of the Hillcrest Country Club in Southern California prefers rebuilding his engines. For a greens-mower costing over $900, for example, he can short-block his engine and replace reels, and continue to operate after 12 years. As usual, there is more than one way to skin a cat!

Budget and inventory rated "musts"

Not every club, or even munici-



Mechanic answers questions concerning rebuilt 76-inch mower for Forest Lawn Memorial Park's John McKinney, left, and Robert Davidson, center.



At exclusive Lakeside Country Club in North Hollywood, Calif., Massey Ferguson diesel tractor tows 5-gang Toro mower.

pality, can afford the computerized cost accounting system of the Broadmoor Golf Club, retreat of the late President Eisenhower, in Colorado Springs. Here, each piece of equipment is assigned a code number, and monthly printouts keep golf course director Charles Clark fully informed on maintenance costs. Even so, there would hardly be a single club which could not benefit by a systematic equipment inventory and a long range plan, or budget, for equipment replacement. "Remember," says Art Twombley of the Bel Air Country Club, "many of your members are business people, and you must show them how they can spend money to make money." He urges that such a budget be "properly prepared," listing each item to be replaced, with its value at today's prices "through 1995."

Riviera Country Club's Terry Bucken, in Pacific Palisades, Calif. arrived in his new job only to find no equipment inventory available. Not only did he install Hamilton Watch hour meters on major equipment, Bucken also inventoried all equipment by name, model year, serial number, original and current expected life, original cost ("which we can't find in most cases"), and annual depreciation.

A further refinement would be to establish a depreciation reserve, funded in cash for equipment replacement. If your club is strapped, this may be hard to come by. Lakeside Country Club, which boasts such Hollywood notables for dues-paying members as Bob Hope, Bing Crosby, Arnold Palmer, and John Wayne, has a "substantial" depreciation or replacement reserve, which Superintendent Eichner nevertheless labels as "prudent and reasonable." Laguna Hills Golf Course is another Southern California club with affluent members, including several top leaders of business and industry. Golf superintendent John Polder, Jr. reports they enjoy a depreciation reserve to back up a practice of 5-years for depreciation and replacement of equipment.

Many municipalities are not this fortunate. Cleveland's Maintenance Superintendent Edward Lubie, reputed to have "one of the best" equipment maintenance programs in government, has faced a "little dollars" budget for the past 5 years. Then he brightens and reports, "This year we received almost $225,000 for new tractors, jeeps and turf equipment." In addition, Lubie enjoys an $80,000 yearly budget for equipment maintenance. Much of this he uses during September and October, by calling in equipment from each of 12 parks and completely overhauling as needed, including transmissions, engines and all working parts.

If Cleveland seems reasonably affluent, consider Newcastle County, Del. whose superintendent Larry Bicking says, "We are at the mercy of the budget people, still operating equipment with 5 years life expectancy after 10 or 15 years." Sound familiar? Bicking says a complete inventory list is submitted each year, but Parks and Recreation typically gets about 30 percent funded in practice. "We are always behind," he adds.

More fortunate is the Huron-Clinton Metropolitan Park Authority in Detroit, whose director David Laidlaw presides over maintenance of 16,000 acres of parkland, including beaches and golf courses. With a 1977 equipment budget totaling $342,000 (not all for grounds maintenance, however), Laidlaw is able to affirm, "We definitely believe in an early replacement program, retiring equipment at the end of its useful life, and not getting into excessive maintenance." Lucky suppliers!

Each year, in the Fall, Huron-Clinton Park people meet to review the "condition of and when to replace" each piece of equipment. This is the first step toward a capital

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equipment budget for the next year, and priorities are agreed upon by individual Park Superintendents and mechanics, the Chief Mechanic, and the Equipment Purchasing Manager. Of course, a new stump chipper may have to wait until next year, if a brush grinder is older and more in need of replacement. But, at least, this park authority is not hurting as a result of its budget process.

Can a formula be used successfully, to predict equipment life, or (better still) to win club support on replacements? Almost universally, Superintendents use judgment rather than mathematical formulas to prove their case. Most that is, but not all. Broadmoor's Chuck Clark frankly admits to using a formula "only if it helps our case." Oakland Hills Country Club's Ted Woehrle acknowledges that both Toro and Jacobsen have formulas to enhance sales of equipment, but adds smilingly, "They're different than ours." As a rule, Woehrle shoots for equipment replacement when maintenance costs reach the 25 percent level, as compared to original cost of a given machine.

Mt. Sinai Memorial Park's Al Dennis admits he guesses at life spans for equipment. "We would all be out of the woods if we had a good rule," he says, "but there's no formula around worth a damn."

Admittedly, there is a good bit of psychology to winning approval from a golf club Board of Directors for an equipment budget. "You had better be right," admonishes Don Lokey of Valley Club. He favors pitching improved maintenance and greater safety, rather than emphasizing labor savings and opening the door for cutting a man off the payroll. By setting up an amortization schedule, he is able to say, "I am instructed to replace this equipment" rather than simply asking for money.

Hydraulic revolution

"I had to take a course in hydraulics, but we needed this kind of equipment desperately," says Don Lokey of Valley Club. This just about summarizes the situation for hydraulic equipment. Talked about for years, the hydraulically-driven, 9-gang mower was introduced from England by the Ransomes Company in the early 1960's. During the same period, Toro and Jacobsen both were developing hydraulic mowers, but only during the last two years has such equipment made serious inroads into American golf courses, parks and cemeteries. Now, few superintendents fail to recognize the tremendous advantages in getting away from gears, sprockets and chains — even at a higher first cost.

Early resistance to hydraulic equipment slowed its introduction. "I don't know anything about it, and don't want to fool around with hydraulic equipment. I'm afraid I might mess it up." These were the early laments heard from some turf mechanics. Then, too, some superintendents objected to possible hose breakage and oil spillage on golf greens — a valid protest. But all that is changed now. Hydraulic mowing equipment has come of age, and superintendents widely acknowledge this as the most significant machinery development in many generations. They recognize the advantages of less maintenance, less down time, no clutch slippage, greater safety on hillsides and more work output. These all help to justify a higher price tag.

Hydraulic equipment, despite its glamour, is not without problems. A Ransomes fairway mower operating at Walt Disney World in Florida is reported to do a "real good job" on thatch and fairways, yet a problem is experienced in keeping reels level. Also, oil spillage "does happen," according to Disney's golf superintendent.

One weakness in this new breed of fairway equipment inherent with hydraulics: power goes to the point of least resistance. One basic improvement has been to develop separate hydraulic drives for cutting reels, rather than "rob" drive wheels of power. As a result Don Lokey of the Valley Club has found his hydraulic equipment safer on dangerous hillsides, claiming more traction and weight at the wheels than conventional units. Also, hydraulics eliminate manual lifting of reels, and possible back trouble with operators. Not to mention the temptation to leave reels engaged and arms lowered when fording rock-strewn creek beds. Or when transporting equipment on the road.

Do municipalities also believe in hydraulic equipment? Yes, if the five years experience of Newcastle County, Del. may be taken as a good example. Superintendent Larry Bicking speaks of his "bat wing" mowers with hydraulic arms, as being "substantially more reliable" than mechanical types. He says their productivity is higher, maintenance lower, and they are more rapidly transported between parks.

"It is common for hand mowers to be out of commission, but rare for hydraulic equipment," is the comment of Don Lokey. He concludes that minor maintenance (chiefly checking pressure hoses) is adequate, "two or three times per year"

Your mechanic: A key person

"Our equipment salesman told us if we didn't get rid of our mechanic, he never could sell us a new piece of equipment!" Not every golf course is blessed with two excellent mechanics as is exclusive Pine Valley Golf club and veteran superintendent Eberhard Steinger of Clementon, N.J. On the importance of a good mechanic to a golf club, some will go even further. According to Richard Eichner of the Lakeside Country Club, if the mechanic should leave, many clubs would "come to a halt in one week" (after, he continues, the "bailing wire" falls off the machinery). Richner appreciates what he calls "incredibly reliable" preventive maintenance. Toro Pacific's John Johnston states he believes that a club can "get along" without a manager or pro, before it can sacrifice a good mechanic (and superintendent, he adds).

Why do some courses or municipalities have trouble in hanging onto first-rate mechanics? Principally because they try to find an $8 to $10 per hour class of man for only $2 or $3, says Johnston of Toro Pacific. Such mechanics can do bet-

Continued on page 24

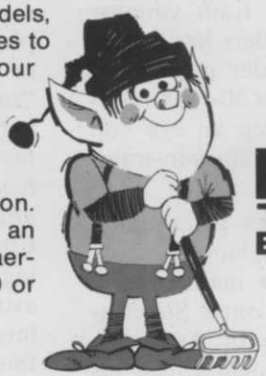
Best design for better penetration.

We make two heavy-duty aerators. The Ryan **Renovaire** has 12 tine wheels that operate in pairs. Unlike other models, they swing a full 18 inches to follow the contours of your land and ride over rocks instead of being damaged by them. Weight can be added to each pair for deeper penetration.

The Ryan **Tracaire** is an economical, rigid axle aerator. It's available with 9 or 12 tine wheels and has a 3-point hitch to force the tines into the turf.

Both models are fast and easy to use. Each can be used with interchangeable open spoon, closed coring, and slicing tines. And you can order a 12′ by 10′ dragmat as optional equipment.

The large area aerators from Ryan. We've designed them simply to work well. And built them to stay that way. For more information see your Ryan distributor or write: OMC-Lincoln, a Division of Outboard Marine Corporation, 5530 Cushman Drive, Lincoln, Nebraska 68501.



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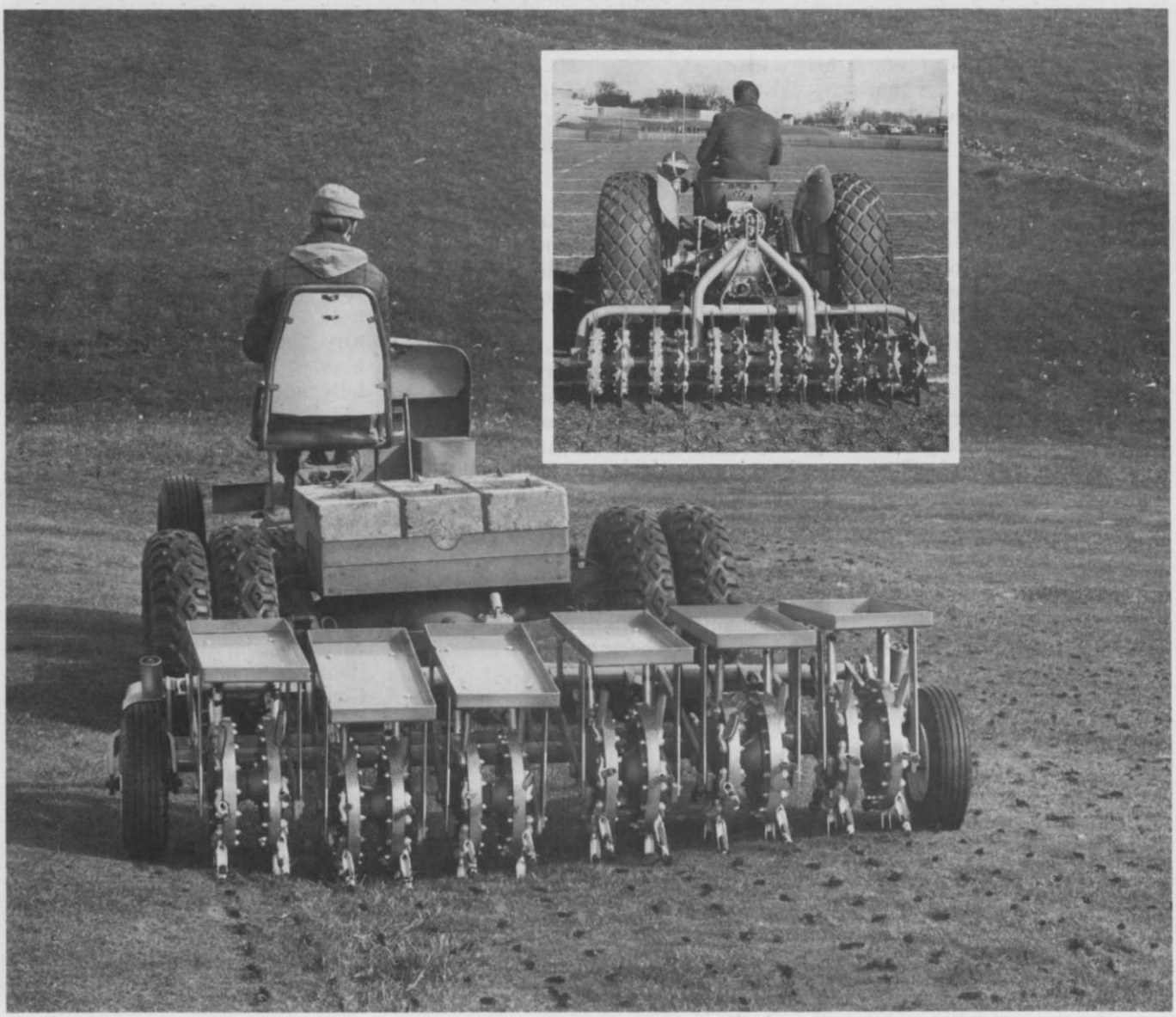
The large area aerators.



Circle 129 on free information card

Equipment

Continued from page 22

ter at their local Chevrolet or Ford agency, although "this is starting to reverse," he notes. Al Noble of B. Hayman Co. in Los Angeles agrees with this observation, concluding that skimping on mechanics is very "short sighted."

Not everybody pays low wages, however; the City of Los Angeles Recreation and Parks offers an entrance-level mechanic $1,200 per month plus 30 percent fringe benefits. Or Lakeside Country Club, which considers itself "extremely competitive" in paying $6.00 per hour plus 29 percent fringes for its Shop Foreman-Mechanic or $4.50 per hour for a non-supervisory mechanic. Los Angeles City's Joe C. Judd agrees that it is not only hard to get good mechanics (even at his high wage offering), but that attrition through advancement under civil service works an additional hardship.

It is not hard to understand why Southern California's Forest Lawn Memorial Park has 21-year and 15-year veteran mechanics in its non-union shop. Based on area surveys, Forest Lawn's Bob Davidson states that his organization pays higher wages than any other local cemetery, and is "way ahead of golf courses." He adds, "We are competitive with anybody hiring mower mechanics, and offer fantastic fringe benefits." Turnover, as a result, is so low as to be "almost unhealthy," Davidson comments.

At a time when additional and more complicated equipment has come on the scene, requiring extra mechanics, there is in many areas an apparent shortage of qualified people. What is needed, says superintendent Al Dennis of Mt. Sinai Memorial Park is the "jack-of-all-trades," who knows "diesel to 2-cycle engines," and can engineer and design small jobs as well as be a practical welder. Dennis finds men with a farm background best for this purpose. Similarly, Lee Nowacki, Golf Manager for Twin Lakes Golf Club in El Monte, California complains of mechanics being "too specialized," able to do brakes or ignitions (for example) but not broad enough to handle such variations as mower repairs.

Broadmoor Golf Club's Charles A. Clark prefers to train younger men, which he considers less "set in their ways" than older men. Even so, Clark relies on his 30-year veteran mechanic to "keep an eye" on progress by his mechanics-in-training.

Some golf courses get double-duty from their mechanics, using them also for course maintenance. For example, Golf Course Superintendents Association of America's President Ted W. Woehrle feels his mechanics can mow part of the day and still take care of mower adjustments. "They appreciate the equipment more," he explains. Even so, he considers his mechanic at the Oakland Hills Country Club the "most important man on the course" (next to the right waterman).

Probably no one in the business has such a unique arrangement for maintenance as Eberhard Steinger, C.G.C.S. from Pine Valley Golf Club in Clementon, New Jersey. Nestled between Atlantic City and Philadelphia is this smallest town in New Jersey, with golf course, waterworks and police force all under Steinger's control. Not unlikely then, is to see a "cop" cutting roughs, or caring for the private putting greens of wealthy residents in this 1000 acre idyllic retreat. Even more unusual is the arrangement for maintenance, where each man has his own machinery and completely cares for three tees, greens and holes from his private tool shed hidden in the woods! And it's worked now for 40 years, says Steinger. A brilliant example of motivation through pride of ownership.

Common pitfall: Inadequate spares

Many golf courses get into a bind because they lack an inventory of spare parts and have not allowed for this in their equipment budgets. This is a "common trap," according to Service Manager John Johnston of Toro Pacific Distributing. He is concerned that customers fail to heed warnings, operating until parts fail, then blame vendors for not producing the parts immediately.

On the other side of the picture, a number of superintendents complain they cannot get parts on time, or that distributors' inventories are "too small," and that some distributors feel they are "doing you a favor" to supply needed parts. "We never want a breakdown we're not able to fix," says Broadmoor's Chuck Clark, "and especially during a tournament, this would be disastrous." Tim Sedgley, Asst. Superintendent at Cherry Hills, lists getting parts on time as his "number one problem."

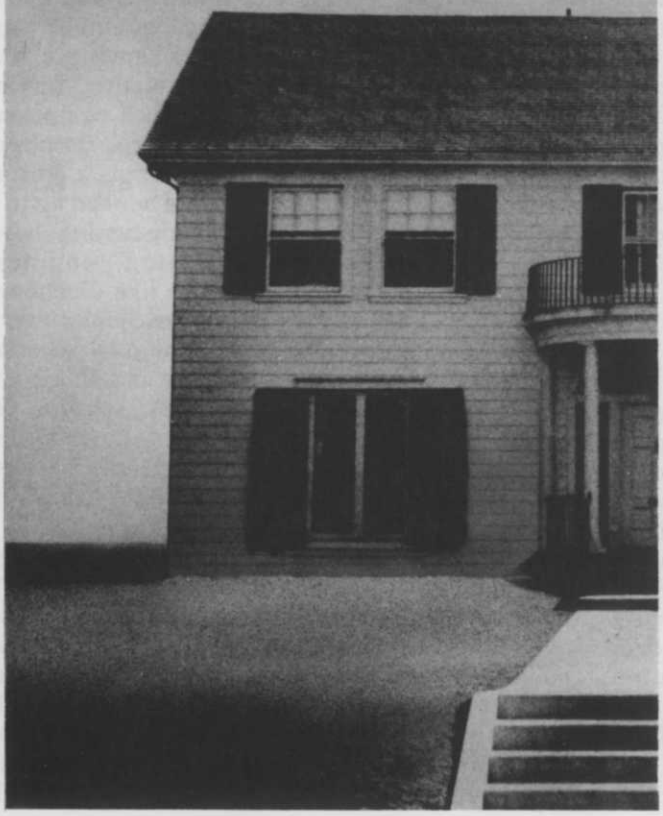
Getting parts is also rated as the biggest maintenance problem for Newcastle County, Delaware. This is complicated by a bidding process, which results in a varied mix of equipment and parts. Equipment may be out of service up to 3 or 4 weeks, according to superintendent Larry Bicking, but 3 to 5 days in the shop is average. Part of this delay results from "chasing parts," since such a variety of parts are "hard to stockpile."

Some superintendents are blessed with suppliers close by, so that stockpiling is less of a problem. Bob O'Link's Bob Williams prefers not to tie up much money in inventory, since his supplier is only one hour away. He advises, incidentally, not letting your mechanic purchase parts, lest you end up with "two knives for every one you really need." On the other hand, bed knives are one of the few things Pine Valley's Eberhard Steinger keeps on hand, even though both Jacobsen and Toro are located close by in Philadelphia.

Spare parts inventory has increased in importance, according to Richard Eichner of the Lakeside Country Club, for at least two reasons. First, there are more kinds of machines now ("Who bothered with Aeroquip fittings or 'O' rings ten years ago?" he asks). Second, uncertainty of supply. Some parts are just plain hard to get. Eichner painfully remembers allowing 9 days, "generously," to rebuild five 5-gang fairway mowers. To receive gear chain mechanisms, axles and mowing frame hangers took 5 weeks! Eichner recommends

A comparison of cord trimmers

...or why The Green Machine® is the country's best-seller.



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Versatility makes it number one.

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Equipment

Continued from page 24

priority stocking of high-failure items, such as drive belts, bed knives, mower clutches and spare rollers.

Heavy expense, of course, is reason enough for at least some limitation in spare parts. Eichner lessens this problem by buying from industrial supply houses, rather than from original equipment manufacturers. As an example, he cites a drive belt for a Rogers cart costing $14.65 plus tax and shipping from an equipment supplier, versus only $4.26 from a bearing supply house, "with one hour delivery service." Eichner has also found a switch to Aeroquip fittings involves a high first cost, but "you gain back one-half of this on your first order for hose replacements."

How much spare inventory do major golf courses carry? Lakeside Country Club stocks about $6,000 in spares, to care for a total equipment selection valued at $175,000 to $190,000. Broadmoor Golf Club, servicing three golf courses, stocks this same amount of spares just for its Jacobsen Greens King mowers and at least $15,000 or more total spares. These spares stand behind an equipment inventory costing $385,000, but which would require over $500,000 to replace today, according to Broadmoor's Chuck Clark.

Training school available

"Universally," states Parks Director James Colley from the City of Norfolk, Va., "municipal administrators have a weakness in understanding and knowing maintenance equipment." Colley's remedy is more training programs, from universities and equipment manufacturers, which provide a broader base of product knowledge than any single manufacturer. One such course is taught by Golf Course Supervisor Neil Beeson from the City of Anaheim, Calif., at nearby Fullerton College. But, admittedly, such offerings are scarce.

A more common approach, and one which increasing numbers of supervisors and mechanics are taking advantage of, is the "service college" put on by such equipment manufacturers as Toro, Jacobsen and Kohler. Toro accepts a 30 student limit on courses booked up to a year in advance, discussing lawn mowers, sharpening, engines, hydraulics and the like. Jacobsen holds schools for mechanics every two years, with additional sessions for their distributors and an advanced golf and park school. B. Hayman Co., Inc. in Los Angeles services usually 600 people in 3 sessions, holding additional schools in San Diego and Las Vegas.

Agreeing that there is a shortage of good mechanics, Toro Pacific's Johnston advises that every course needs a first-line mechanic as an instructor and an adequate budget. Los Angeles Trade Tech trains such specialist mechanics, "but can't supply enough graduates," concludes Johnston. □

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And now we've added improvements that make the top dresser even better.

The unit mounts directly on the chassis, without an extra frame. And the new system uses a rubber fabric conveyor belt to carry material to the gate. It's quieter, with reduced maintenance and longer life than the previous design. Plus, it enables you to spread materials from rock salt for icy sidewalks to fine, powderized soil on greens or tees.

Like all Cushman equipment, the top dresser and Turf-Truckster are built to last. So you get an efficient system that will handle just about any spreading job for years to come. With other accessories, your Cushman can spray, spike, aerate, and dump. Use it. It's more than basic transportation. It's a total turf-care system. Write for your Cushman Turf catalog today.

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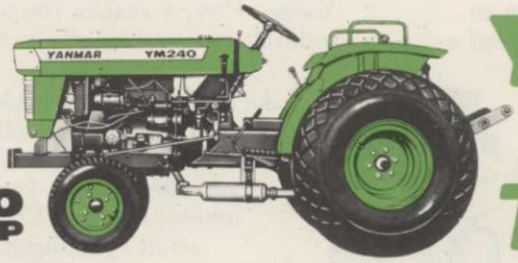

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ASPA convention draws record crowd

A record 425 people viewed over 40 exhibits and demonstrations at the American Sod Producer Association's 11th annual summer convention and field day in July. Guests from Australia, England and Sweden and a group from the Nursery Sod Growers Association of Ontario attended.

Booth exhibits were educational, as many suppliers to the sod industry were there to answer specific questions about their lines.

Several types of irrigation equipment and sprayers were demonstrated at the Green-Glo Turf Farms Thursday afternoon. At the Glenn Rehbein maintenance shop many innovative features, including a mini-computer for farm/sod operations, were demonstrated and discussed.

New officers and board members were introduced. Glenn Rehbein, Glenn Rehbein Farms, is now the president of ASPA. E. John Hope, Manderley Turf Farms, took over as vice president, replacing Charles Lain of Pine Island Turf Nursery who has been appointed to fill an unexpired term on the board of directors, created by the resignation of Rober Hummer. Paul Unruh, Unruh's Turf Farm, is now secretary and Chris Beasley, Tuckahoe Turf Farms, is the new treasurer.

The board of trustees for ASPA now includes Chris Beasley, Ray Weekly, Prince William Turf Growers, Woodrow Wilson, Eastside Nursery, Charles Davis, Wharton Turf Grass, Emory Patton, Turf Center, and Charles Lain.

Friday was spent at Harley's Sod Farm watching demonstrations of actual sod farm operations, including mowing, harvest, loading, and the equipment involved.

Mayor George Latimer welcomes ASPA to St. Paul

ASPA president Norman LeGrande gives industry update.

Harley Johnson of Minn. Turf Assoc. acts as host.

Business review and future goals capture members (above) interest. Booths and demonstrations (below and bottom left) highlighted show.

Bob Garey (right), executive director, was instrumental in programs success.

Meeting Dates

Second Annual Hoosier Turfgrass Association Research and Scholarship Golf Tournament, Orchard Ridge Country Club, Fort Wayne, Ind., Sept. 12.

Lawn & Garden Distributors Association Annual Convention, Hershey Motor Lodge and Convention Center, Hershey, Penn., Sept. 13-17.

1977 Mid-Atlantic Fluid Fertilizer Conference, Host Inn, Harrisburg, Penn., Sept. 14-15.

ALCA Management Information Systems Executive Management Seminar, Chicago, Ill., Sept. 15-16.

Annual Turfgrass Equipment Irrigation and Supplies Field Day, G.C.S.A. of N.J., Hopewell Valley Golf Club, Hopewell, N.J., Oct. 4.

Northwest Turfgrass Conference, Salishan Lodge, Glenedan Beach, Ore., Oct. 5-6.

ALCA Management Information Systems Executive Management Seminar, Sheraton Airport Hotel, Atlanta, Ga., Oct. 6-7.

Florida Nursery and Allied Trades Show, Curtis Hixon Convention Center, Tampa, Fla., Oct. 7-9.

5th Transworld Home Horticulture Exhibit, Chicago Expocenter, Chicago, Ill., Oct. 14-17.

Florida Turfgrass Annual Management Conference and Show, Sheraton Towers Hotel, Orlando, Fla., Oct. 16-19.

17th Annual Turfgrass Equipment & Materials Educational Exposition, Orange County Fairgrounds, Costa Mesa, Calif., Oct. 19-20.

ALCA Management Information Systems Executive Management Seminar, Sheraton Mockingbird Hotel, Dallas, Tex., Oct. 20-21.

International Society of Arboriculture, New England Chapter, Annual Meeting, Red Jacket Mountain View Inn, North Conway, N.H., Oct. 24-25.

Continued on page 32

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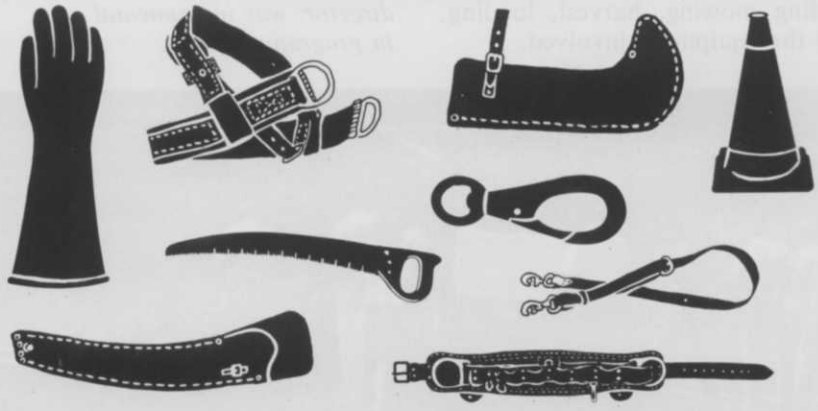

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PROVEL® herbicide is packaged 6x1 gal. per case, 2x2½ gal. per case and 30 gal. drums.

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Meeting Dates

Continued from page 30

Green Industry Seminar and Trade Show, Springfield-Oaks Park and Youth Activities Center, Davisburg, Mich., Oct. 25-26.

Washington-North Idaho Seed Association Annual Convention, North Shore Motor Hotel, Coeur d'Alene, Idaho, Oct. 28-29.

Professional Grounds Management Society Annual Conference, Stouffers Hotel, Greenway Plaza, Houston, Tex., Oct. 30-Nov. 3.

Texas Recreation and Park Society Annual State Conference, La Quinta Royale, Corpus Christi, Tex., Nov. 2-5.

ALCA Maintenance Symposium, Northlake Hilton Inn, Atlanta, Ga. Nov. 3-4.

Landscape Maintenance Contractors Symposium, Northlake Hilton Inn, Atlanta, Ga., Nov. 3-4.

State of the Art Symposium on Dutch Elm Disease Control, U.S. National Arboretum, Washington, D.C., Nov. 9-10.

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Meeting Dates

Continued from page 32

ALCA Maintenance Contractors Symposium, Northlake Hilton Inn, Atlanta, Ga., Nov. 3-4.

Landscape Maintenance Contractors Symposium, Northlake Hilton Inn, Atlanta, Ga., Nov. 3-4.

American Society of Agronomy, Crop Science Society of America and Soil Science Society of America Joint Meeting, Los Angeles Bonaventure and Hilton Hotels, Los Angeles, Cal., Nov. 13-18.

ALCA Management Information Systems Executive Management Seminar, Airport Hilton Inn, Denver, Colo., Dec. 1-2.

Ohio Turfgrass Conference and Show, Dayton, Ohio, Dec. 6-8.

ALCA Design/Build Symposium, Sheraton-Dallas Hotel, Dallas, Tex., Dec. 7-8.

TURF GRASS '78, Maryland Turf Grass Council, Sheraton Lanham Inn, Lanham, Md., Jan. 8-12.

ALCA Annual Meeting and Trade Exhibit, Hyatt House, Orlando, Fla., Jan. 30-Feb. 3.

American Sod Producers Association Winter Conference, El San Juan Hotel, San Juan, Puerto Rico, Feb. 2-28.

National Arborist Association Annual Meeting, Sarasota Hyatt House, Sarasota, Fla., Feb. 19-23.

Wisconsin Landscape Federation 1978 Conference, Concourse Hotel, Madison, Wis., Mar. 5-6.

Association of Physical Plant Administrators of Universities and Colleges Convention, Radisson Hotel, Minneapolis, Minn., May 21-24.

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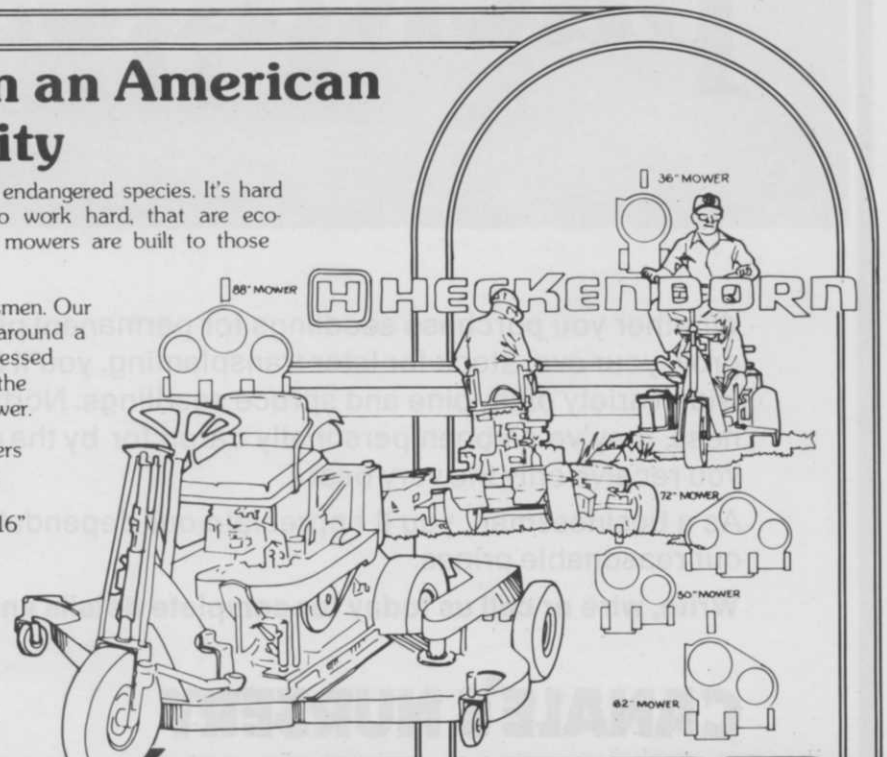

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Pre-mixing stops fall-out

Incompatability of pesticides in a spray tank is a messy thing. Incompatibility can be manifested as 1) a semi-solid or jelly substance, 2) precipitates as a gummy sediment, or 3) incomplete dispersal of the pesticides.

Pre-mixing the pesticide proposed mixture in jars in appropriate use proportion is one method to determine if incompatability might occur.

In addition to pre-mixing in jars, incompatability can be minimized if the following procedure is used when mixing pesticides:

1) It is best to pre-mix the pesticides in small containers.

2) Male a slurry of wettable powders.

3) Pour the slurry into a nearly filled spray tank while agitating. If a pesticide is a water dispersible liquid (WDL), add WDL directly to the water in the spray tank.

4) Next add the liquid formulations while still agitating.

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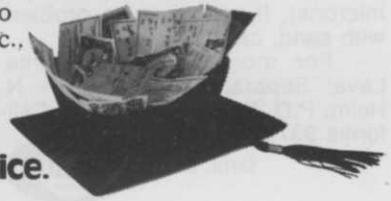

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Sex life of fire ant may be one key to eventual control

A Texas scientist has discovered an oddity in the sex life of the fire ant that may be the very weakness needed for control of this fast-spreading pest.

Dr. Akey C. F. Hung, entomologist with the Texas Agricultural Experiment Station has found some naturally occurring sterile male fire ants. "These sterile males are associated with colonies which contain a large number of queens," he says.

"This in itself is unusual since most colonies of fire ants have only one queen, which may live for years.

"If we can identify the cause of this naturally-occurring male sterility, the production of sterile males could then be encouraged in natural populations, or they could be artificially produced for release.

"Sterile males would be of real help in reducing reinfestation of treated areas or halting the spread of the imported fire ant. A mature fire ant colony can release as many as 700 queens during mating flights, and a queen can fly as far as ten miles.

"After mating, the queen will in turn establish her own colony and produce more queens in a year or so. Since the queen only mates with one male, if that male was sterile, her eggs would be infertile and fail to hatch, thus she cannot establish a new colony," Hung says.

This potential control method is of major significance because of 1) growing concern about the development of resistance to insecticides in pest species, and 2) pollution of the environment with persistent toxic chemicals.

Sterile males of the red imported fire ant were first discovered by Hung in 1974 in three counties in East Texas. Since then he has sought the cause and its potential in fire ant control.

Like honeybee drones, normal male fire ants have only one set of chromosomes. However, Hung finds sterile males have two sets of chromosomes as do normal queen and worker ants.

His research had been complicated by the fact that the queen and male fire ants only mate in the air at an altitude of 200 to 500 feet.

By using a genetic marker, Hung has determined that queens of the red imported fire ant mate with only one male.

Since fire ant queens and males won't mate in captivity, Hung has developed an artificial insemination technique for fire ants. He has used this method and other biochemical techniques to verify one case of natural crosses between the southern fire ant and the tropical fire ant.

This research is aimed at developing genetic control methods in the near future to supplement the large-scale insecticide-based control programs already in operation.

Hung is a member of an Experiment Station team, working on fire ant control, directed by Dr. Bradleigh Vinson. This group is working on a broad variety of different control methods that include 1) research to discover chemicals that won't pollute the environment but will kill fire ants, 2) juvenile hormones to prevent normal development of young ants, 3) pheromones which are the chemical "smells" used for communication by insects, 4) attractants, which will help ants locate baits and increase usage and 5) environment which discourages or prohibits the spread of these ants.

Vinson stresses the importance of developing alternative methods of control since so many of the chemicals previously used are now unavailable. □

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These experiments are ongoing and results may change with time.

Bio-dethatch

Bio-dethatch was applied on June 11, 1975 at the rate of one lb/M to one-half of 10 x 10 ft. plots of seven Kentucky bluegrass cultivars, most of which had excessive thatch layers. Plots were not irrigated and no rain occurred for 15 days following the application. Thatch measurements were taken in November. There was no significant difference in thatch accumulation between the treated and untreated plots.

Treatments were repeated on May 6, 1976, and the plots were irrigated immediately following application. Thatch measurements were taken again in November of 1976. Bio-dethatch was not effective in reducing the thatch layer.

Tall fescue

An experiment to determine the effects of fertility levels, cultivation, and clipping removal on quality and thatch accumulation of tall fescue turf was initiated on October 13, 1974, on established tall fescue under turf management for several years. Turf quality was increased significantly by leaving clippings on plots. Aerification increased turf quality while verticutting decreased it when compared with no cultivation treatment. The greatest increase in turf quality from aerification was obtained where clippings were not removed and 10-10-10 was supplied at the rate of 1½ lb N/M each year.

High quality turf was produced with three yearly applications of 10-10-10 at 5 lb/M where clippings were not removed and plots were aerified. This combination of treatments resulted in turf quality as good as three applications of 15 lb/M with clippings removed and not aerified. There has been no accumulation of thatch during the experiment.

Pennlawn red fescue

Performance of Pennlawn red fescue turf as effected by irrigation, mowing height, and nitrogen fertilization was studied beginning in the spring of 1975. All possible combinations of three rates of N (½, 1, and 1½ lb N/M) applied in spring and fall and three mowing heights (1, 2 and 3 inches) were used. Four applications of the treatments were irrigated to promote summer growth.

Any beneficial effects from irrigation in preventing summer dormancy were offset by increased disease damage in 1975. Summer stress was not as severe in 1976 and three irrigations in July and August improved turf quality. However, the highest quality turf during spring and fall was on plots that were not irrigated. This is probably due to the greater use of nitrogen during the summer months on irrigated plots. On irrigated plots the 2-inch mowing height and 1½ lb N/M were the best treatments. The 3-inch mowing height and one lb N/M treatments were best on plots not irrigated.

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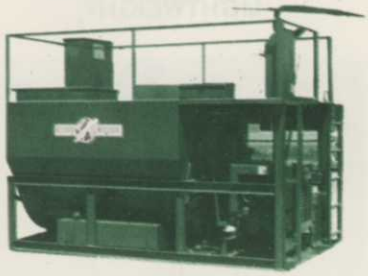

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Rutgers turf research viewed

The Rutgers Turfgrass Research Day, August 4, gave turf people the chance to view firsthand the research plots near New Brunswick, N.J., and results as they appear to date. Observations like these are very valuable because they give a visual impression that words sometimes do not create.

The current results of many extensive research projects were viewed. Dr. C. Reed Funk discussed Kentucky bluegrass plots. His work in turfgrass breeding is widely acclaimed. Bill Dixon, senior soils and plant technician, pointed out the possibilities *Poa trivialis* has in adapting to some turfgrass situations. Dr. R.W. Duell, who is conducting research in highway turf, explained his plots and the work he is doing with roadside turf species.

Shadehouses, donated by the New Jersey Turfgrass Foundation, host of the field day, provide a unique method for analyzing the effect of varying degrees of shade on cultivars and species of fine turfgrasses. One house gives approximately an 80-82% light reduction while the other gives 97-98% reduction. The plots are also duplicated again under natural shade. Graduate assistant Steve Cosky explained his research underneath the roots.

Fertilizer treatments and responses, preemergent crabgrass controls, breeding and strain improvement plots, and disease control experiments were presented as they have developed under the guidance of scientists at Rutgers. □

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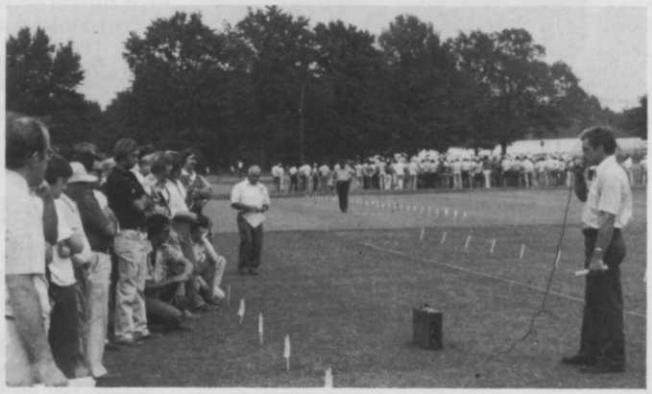
Dr. H. W. Indyk, Extension Specialist in Turfgrass Management, got the field day off to a fast start and kept the groups moving to see many experiments.

Above, Dr. R. W. Engel discusses bluegrass fertilization plots. Below, Dr. P. M. Halisky explains disease control on bentgrass.

Above, shadehouses allow experiments under controlled shade. Below, C. W. Bussey evaluates preemergent crabgrass controls.



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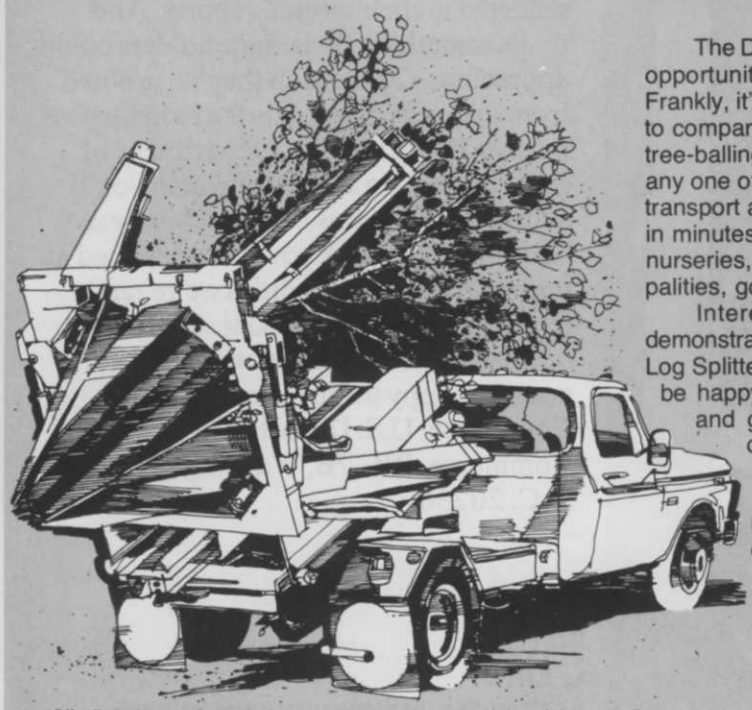

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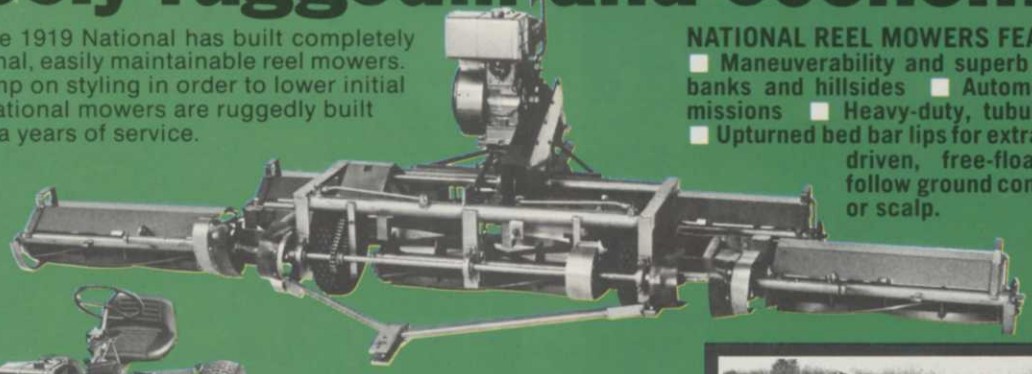

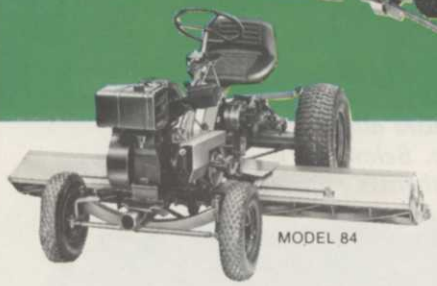

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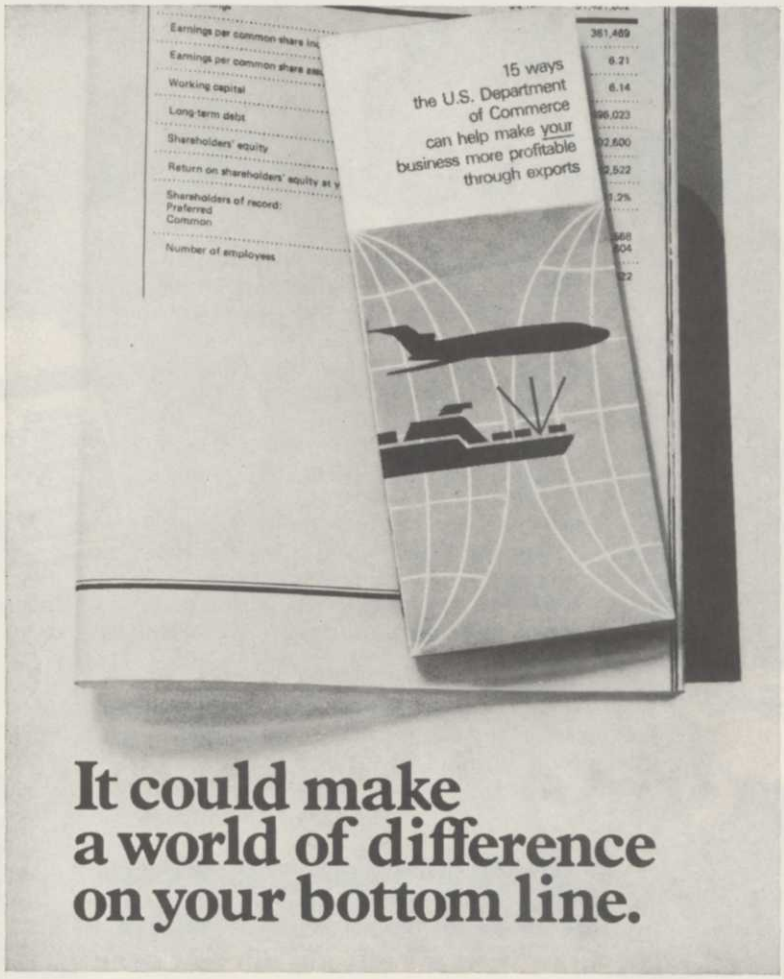

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Nurserymen meet in Seattle

The American Association of Nurserymen held its 102nd annual meeting, July 16-20, in Seattle, Washington. Headquartered in Washington, D.C., the association serves over 2,700 member nursery firms representing garden center operators, wholesale growers, landscape firms, mail order nurserymen and allied suppliers.

Avery H. Steinmetz, president of Stark Street Properties, was inducted into the AAN's Nurserymen's Hall of Fame, the highest honor the nursery industry may bestow. The Hall of Fame Award was conveived to recognize truly outstanding nursery businessmen whose acts and deeds in business, home, community, and country serve as a guide and challenge for all other members of the nursery industry.

The Norman Jay Colman Award, the nursery industry's highest award for horticulture research, was presented to Dr. Haruyuki Kamemoto, renowned orchid cytologist and professor at the University of Hawaii.

The award, named after the first Secretary of Agriculture of the U.S. and a two-term president of the AAN, is granted each year to stimulate research work in the land grant universities, colleges and other research institutions.

Dr. Howard C. Brown, Dean of Agriculture and Natural Resources at Cal Poly University, received the second L. C. Chadwick Award from the AAN. The award was established last year by the Education Committee of the AAN to honor those classroom horticulture teachers who have made their mark where it counts most — among their students. Dr. L. C. Chadwick was the first recipient.

Ed Hume received the Garden Communicator's Award. In presenting the award, immediate past president Hilscher praised Hume for his outstanding contributions towards increasing public awareness of environmental plants and landscape beautification. Hume writes regular garden columns for the "Seattle Times" and "Vancouver Columbian." He broadcasts on Seattle's KBIQ-FM and conducts the "Gardening with Ed Hume" show, aired on KING-TV in Seattle and KGW-TV in Portland each Sunday.

A Crimson King Maple, donated by the Julius Rosso Wholesale Nursery, Seattle, was presented as a gift to the people of Seattle for their gracious hospitality to the AAN. It was planted in a downtown park to be enjoyed by all citizens.

Itsuo Uenaka, president of Cupertino Nursery in Cupertino, California, was elected president of the AAN. He succeeds L. J.

Dr. Haruyuki Kamemoto receives the Norman Jay Colman Award.

Above, Ed Hume receives Garden Communicators Award. Below, l-r: R. F. Lederer, Seattle Mayor Wes Uhlman and L. J. Hilscher.

President L. J. Hilscher presents the AAN Hall of Fame Award to Avery H. Steinmetz. Sharing is his wife, Agnes.

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Nurserymen

Continued from page 43

Hilscher, Hilscher Nursery & Garden Center in Texas, who remains as current Director-at-Large. Uenaka, along with other officers, will direct the national efforts of the AAN in all areas including legislation and environmental improvement.

Ernest A. Tosovsky, Jr., vice president of Home Nursery Greenhouses, Edwardsville, Ill., was elected vice president. Tosovsky also serves as treasurer and director of Region III of the AAN.

John B. Wight, Jr., president and chairman of the board of Wight Nurseries, Cairo, Ga., has been reelected to the board of directors. He serves as director of Region II, which represents over 650 member nursery firms in southern states.

Hugh Steavenson, president and owner of Forrest Keeling Nursery, Elsberry, Mo., was reelected director of Region IV, representing over 350 member nursery firms.

R. Jerry Rosso, secretary and treasurer of Julius Rosso Wholesale Nursery Company, Seattle, Wash., succeeds Itsuo Uenaka as director of Region VI, also representing over 350 member nursery firms. Rosso served as convention chairman for this year's meeting.

Kent Langlinais, Kent's Nursery, La., is director of Region VII, and Henry A. Weller is the director of Region I. □

Cecil Shirar (left) receives Wholesale Nursery Landscape Award from Hubert Nicholson, president of Wholesale Nursery Growers of America. The Award is presented for outstanding efforts in landscape beautification of Shirar's firm's grounds.

L.J. Hilscher (right) turns over the President's Gavel to Itsuo Uenaka.

New AAN officers: bottom l-r, Ernest A. Tosovsky, L. J. Hilscher, Itsuo Uenaka, Hugh Steavenson; top l-r, Kent Langlinais, Jerry Rosso, John Wight, Jr., and Henry Weller.

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Desert saltbush species released

"Corto" Australian saltbush, *Atriplex semibaccata,* R.Br., has been released by the USDA and the Arizona Agricultural Experiment Station, for use as a ground cover for erosion control and beautification of highway rights-of-way, construction sites, and similar disturbed areas in the desert Southwest.

Australian saltbush is semiherbaceous plant that was introduced into California in the 1880's and various ecotypes have become naturalized in southern California, Arizona and New Mexico since.

"Corto" is a semiprostrate perennial plant, eight to 10 inches tall and spreads to a diameter of six feet. Stems become somewhat woody, but the plant is primarily herbaceous. Leaves are numerous and grey-green in color. The flowers are monoecious and inconspicuous. Male florets are located on the end of the stems. Female florets are located in the upper leaf axils. Fruits are fleshy and turn red at maturity. The fruit is subtended by two fruiting bracts that turn red with fruit maturity and exhibit fall colors from October through December.

"Corto" plants provide good cover with an annual precipitation of 10 to 12 inches. Hardiness limits have been established at about 3,500 feet in elevation. Older plants at Tucson, Ariz. are killed back to the crown by temperatures below 25°F. Young plants have withstood 17°F. temperatures at Tucson and recovered in the spring. It is probable that plants would be permanently damaged at temperatures less than 10°F. Plants are shortlived, but stands are reestablished from seed.

"Corto" is best adapted to light and medium textured soils. It is well adapted to saline-alkali sites. Tests conducted on mine tailings, overburden, and mixed tailings-overburden showed good plant vigor with pH readings of 7.8 to 8.2 and total soluble salts of 2,870 ppm, approximately four tons of soluble salts per acre.

No grazing studies have been done specifically with "Corto" Australian saltbush, but grazing studies in California reported Australian saltbush as a good forage plant for horses, cattle and sheep. Results of forage analysis show that the amount of digestible nutrients compares well with that of alfalfa.

"Corto" has approximately 246,000 seeds per pound. Seeding rates of seven pounds per acre pure live seed have resulted in adequate stands on critical areas. Late fall or early spring planting provide the cool season best for seedling establishment. Drilling the seed less than one-fourth inch into a firm, clean seedbed and compacting the soil around the seed results in good germination.

Breeder and Foundation seed will be maintained at the SCS Tucson Plant Materials Center, Tucson, Ariz. Foundation seed is available to growers through the Arizona Crop Improvement Association and Natural Resource Conservation Districts.

◀ For ad on preceding page circle 122 on free information card

Healthy little beauty likes shade!

What a beauty little Glade Kentucky bluegrass has turned out to be! A fine, healthy specimen, Glade has a higher level of resistance to powdery mildew, and performs better than many other Kentucky bluegrasses in up to 60% shade as well as open sun. Glade, a Rutgers selection (nationally tested as P-29), has improved resistance to stripe smut and leaf rust. Midwestern and Northeastern university tests indicate that Glade has better than average resistance to Fusarium blight.

Glade is one of the fastest germinating bluegrasses, quickly forming a thick rhizome and root system. A dense, low-growing, leafy turf, Glade has an attractive medium to dark green color.

Glade Kentucky bluegrass is your guarantee of physically pure and genetically true seed. You won't be seeding annual bluegrass (*Poa annua*), short-awned foxtail or bentgrass when you plant Glade. Specify this healthy little beauty in your next lawn seed mix. It blends beautifully with fine fescues and other elite bluegrasses, persists in shade when many others weaken. Glade Kentucky bluegrass is available at your local wholesale seed distributor. Insist on Glade in your mix.

Another fine, quality-controlled product of Jacklin Seed Company.

Glade

KENTUCKY BLUEGRASS

U.S. Plant Patent 3151

NLA finds landscape guarantees widespread

A recent survey by the National Landscape Association revealed that guarantees of plants and labor are offered by a majority of landscape firms. Ninety-seven percent of the firms responding to the survey indicated some type of warranty was provided.

The results also showed that plant material guarantees are more common than labor guarantees. No preference was revealed for full versus limited warranties, although the time period covered varied widely.

The customer was assured of satisfactory plants in 92 percent of the landscape firms' guarantees. The warranty usually stipulated that the customer assume the responsibility for the care and maintenance of the newly-installed plants. Regional differences in the percentage of firms that guaranteed plants appeared:

Northeast	98%
Southern	97%
Great Lakes	88%
Western Plains	88%
Southwestern, Pacific and other	92%

It is interesting to note that the percentage guaranteed decreases in the Great Lakes and Western Plains regions by about ten percent. Moreover, many firms stated a time period of "one growing season" in both these regions. These differences may be attributable to the severity of winters. Note that the percentage rose again in the Far West regions.

Another significant finding was the lower percentage of firms offering guarantees of labor. Labor coverage is definitely lower than plant coverage — only 62 percent of labor is guaranteed nationwide. Companies seem to generally guarantee the labor performance 100 percent, 50 percent, or not at all — very few percentages in between.

Again, there were regional differences:

Northeast	74%
Southern	52%
Great Lakes	72%
Western Plains	48%
Southwestern, Pacific, and other	58%

The percentages in the Southern and Western Plains areas are significantly lower than the Northeast and Great Lakes areas. In both of these areas firms generally guarantee their labor 100 percent or not at all.

The landscape guarantee survey also questioned the type of guarantee/warranty provided, specifying that a full guarantee requires replacement or repair of a product (that is defective or fails) within a reasonable

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KIORITZ CORP. OF AMERICA
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(312) 498-1390

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time at no cost: anything else is a limited guarantee. No preference for a full rather than a limited guarantee appeared, however; respondents split almost evenly nationwide: 73 offered full guarantees, while 71 offered limited.

The final question on the NLA survey concerned the time period covered by the guarantee of plants and/or labor. The respondents chose between "one calendar year," "months," and "other." Most landscape firms (53 percent of the survey respondents) base their guarantees on one calendar year:

Northeast	26 (of 36 respondents)
Southern	12 (of 20)
Great Lakes	26 (of 37)
Western Plains	25 (of 39)
Southwestern, Pacific and other	10 (of 16)

These 38 firms, however, differed widely in the number of months specified — from one to nine months after installation. The average number of months nationwide was 4.4. Regionally, the Northeast and the Western Plains were high (5.1 and 5.5 respectively); the Great Lakes and the Southwestern, Pacific and other regions specified an average of 4.5 and 4.3 months respectively; and the Southern region guaranteed their plants for 3.5 months.

Other time periods specified included "one year from installation," "one growing season," or until a certain date after installation such as August 1 or November 1. (Due to possible consumer misunderstanding, NLA recommends that precise time guarantees be used in lieu of "one growing season.") One firm dealing entirely with industrial landscaping, replaced and replanted until the customer was satisfied.

The NLA survey demonstrated that guarantees/warranties are common among landscape firms, especially for plant coverage. Labor is guaranteed by fewer firms. The respondents split in preference for full or limited guarantees, and most seemed to base their guarantees on a one-year period. The Northeast and Great Lakes regions showed similarities in almost all categories (e.g. high percentage coverage of plants and labor, preference for full guarantees, and one calendar year coverage.) In contrast, the Southern and Western Plains states revealed similarities in low incidence of labor guarantees, preference for limited guarantees, and coverage for specified time periods. The Southwestern Pacific and other regions were middle-of-the-road. □

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Circle 149 on free information card

Products

Toro has developed a new sprinkler head with a combination of features designed to reduce water usage as well as installation and maintenance costs of automatic underground irrigation systems.

The Rain Pro permits spacing up to 53 feet and features clog-resistant nozzles, corrosion-resistant construction and a removable basket screen that can be serviced easily from the surface. It has four rotating nozzles that deliver water slowly and uniformly to minimize puddling and run-off.

Circle 701 on free information card

Heckendorn Manufacturing has introduced a low cost 8 hp stump remover available with its own trailer for easy transportation or mounting on a Heckendorn mower, pick-up truck bumper, garden tractor or other unit.

The stump remover reduces stumps to an easily removed pile of fine chips, leaving a clean depression. The cutter disc has four hardened carbide teeth, easily removed for sharpening or replacement, on a 12-inch diameter by ½-inch thick steel plate. The depth of cut on each pass of the cutter disc is regulated by a hand screw adjustment, set by the operator to remove the maximum amount of material possible.

Circle 702 on Free Information Card

A new 20-cubic-foot capacity rear-mounted box scraper which fits standard category II 3-point quick-coupler hitches has been introduced by the Woods Division of the Hesston Corp. It weighs 750 pounds and is designed for tractors with maximum 60 hp or 6,000 pounds gross weight.

The BB600 box scraper features hydraulically controlled scarifier shanks for 5-position depth penetration.

Circle 703 on free information card

"Understanding Soil Compaction", a 22-page booklet has been published as a helpful guide by Davis Manufacturing Division of J I Case.

The booklet outlines the reasons soil compaction is needed and discusses soil types, properties and moisture content. It explains compaction methods and machine characteristics to consider for selection of the most effective combination in various job applications. The guide also explains the most widely used soil compaction tests, their functions and purpose.

Circle 704 on free information card

Rain Bird has introduced Model 1300, a new bubbler nozzle, designed for a variety of landscape irrigation applications.

The unit is constructed of molded plastic to minimize field problems and maintain peak operating efficiency and can be easily installed on existing ½-inch irrigation systems.

Flow control is regulated by an adjustable screw on the bubbler's head. Operating pressure ranges from 10 to 60 psi with a corresponding performance range from 1.0 to 2.7 gpm.

Circle 705 on free information card

A battery-operated electronic Soil Moisture Meter which measures and displays the amount of moisture in the soil instantly, has been introduced by Agtronics Manufacturing. The probe measures conductance in the soil.

Circle 706 on free information card

Reach-All Manufacturing and Engineering has recently introduced Model OC5048 aerial basket with 40' side reach, 48' bottom-of-basket height and a 1-man, 300 lb. or 2-man 600 lb. capacity. This model features a concept new to non-overcenter basket design — the lower boom travels overcenter (133° articulation) — thus extending effective side reach to 40 feet. While achieving side reaches comparable to overcenter devices, this design is available at lower costs.

The OC5048 is equipped with Reach-All's standard safety and operational features, including double cylinders at both lower and upper boom, automatic hydraulic-cylinder basket leveling, continuous, unlimited rotation, a fiberglass insert in the lower boom, a 345 KVAC potential dielectric certification and an end-mounted basket for a 3-sided working area.

Circle 707 on free information card

The new "A Series" rotary field electric generators are available from Ag-Tronic. Powered by industrial-type Briggs & Stratton engines, the generators feature rotary field design to provide greater motor starting capacity, superior performance and longer life. A protective cradle of one-inch steel tubing surrounds each unit to protect against damage. Rubber feet on the cradle also dampen vibration and minimize crawling.

The "A" Series" is full load continuous duty rated to deliver rated capacity. Outlets are protected by circuit breakers which can be reset immediately. A variety of NEMA receptacles, duplex and twist lock, allow operation of several tools at once. The generators are available with cqpacities of 1250, 2000, 3000, 4500 and 6000 continuous duty watts.

Circle 708 on free inforrmation card

A series of detachable loaders is described in a new brochure from the Allis-Chalmers Corp. One of the loaders, the Model 470, matches the high performance of the over 100 hp, 7000 series tractors from the company. Among its features are a quick, easy attachment and detachment that is hydraulically assisted; a wrap-around frame that evenly distributes loads to the front and rear axles; and an assortment of eleven utility attachments.

Also described is the new Model 400 loader compatible with the Allis-Chalmers 40 and 50 hp tractors and the Model 500 loader for mid-sized tractors.

Circle 709 on free information card

Jacobsen has made available a water cooled engine as an option for the 72-inch Out Front Commercial riding rotary mower. The heavy duty engine option was added for users who require longer than usual operating intervals between engine maintenance. It has a comparatively low operation temperature (180°F) which extends the life of valves, rings and other internal working parts, a characteristic of water cooled power.

Circle 710 on free information card

Classifieds

When answering ads where box number only is given, please address as follows: Box number, c/o Weeds Trees and Turf, Dorothy Lowe, Box 6951, Cleveland, Ohio 44101.

Rates: All classifications 65¢ per word. Box number, $1. All classified ads must be received by Publisher the 5th of the month preceding publication date and be accompanied by cash or money order covering full payment. Mail ad copy to: Dorothy Lowe, Weeds, Trees & Turf, P.O. Box 6951, Cleveland, Ohio 44101.

USED EQUIPMENT

2 — 50' AERIAL BASKETS — 65' Aerial basket, 2 Asplundh brush chippers. 1 Vermeer tree mover, 1 Vermeer stump cutter. Small hydraulic crane, 2 John Bean sprayers, ten ton tri-axle trailer, 1 Prentice log loader, tractor with front end loader and Bobcat loader, Parkway Tree Service, 120626 W. Cherry, Wauwatosa, Wis. 414 257-1555.

1964 ASPLUNDH aerial bucket truck, 55' working heights; 1700 International Load Star; 5 speed box with Hi and Lo range, 4-wheel drive with built in 12" chipper and hyd. dump box, also built in air compressor and aux. engine, excellent condition. 1966 and 1970 F350 Ford with chipper dump box and side tool boxes. 1969 GMC split dump chipper truck. 1960 Ford with built in chipper and hydraulic dump bed. H & M Tree, pictures available. Phone: 707 459-2013.

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FOR SALE — 1975 Vermeer TS-22" tree spade. Mounts on Bobcat or 3 pt. hitch. Excellent condition. $1800.00. 1976 Care tree 30" tree spade. Mounts on Bobcat or 3 pt. hitch. Mint condition. $2995.00. 1976 Care tree 36" tree spade. Mounts on 990 Bobcat, tractor, loader, or dozer. Mint condition. $4495.00. 1972 Vermeer TS-44T tree spade on 1974 GMC 1 ton. New spades. Good condition. $7800.00. Will send photographs upon request. Call or write: Spartan™ Tree Transplanting Equipment Company, 16084 S. Chandler Rd., East Lansing, Michigan 48823. Phone 517 351-1370. (We buy, sell, and repair high quality tree transplanting equipment).

FOR SALE: Ford 5000 diesel with less than 300 hours operating time. Selecto-O-Speed transmission, power steering, wide flotation tires, equipped with Mo-Trim Telescopic 31' reach side arm mower for rotary or sickle bar. Suitable for farm or industrial use. Excellent condition. Marianna Telephone Co., P.O. Box 308, Marianna, Pa. 412 267-3333.

VERMEER 671 LOG CHIPPER with GMC 4-53 diesel engine. Like new with only 74 total hours on tach. $18,500 (new price is $38,000). 100 foot Arlo crane mounted on Mach truck. Brand new auxiliary generator to run crane, and has optional bucket for crane. $10,500. Vermeer no. 10 stumper, completely reconditioned. $3,100.00. ESSCO, 5620 Sunrise Hwy.,Massapequa, N.Y. 11758. 516 799-7619.

FMC BEAN SPRAYER, all purpose, model 1010 TRP. 200 gallon Epoxy lined tank. Like new! $1,295.00. Toro Rak-O-Vac, PTO driven, flextip reel, 5¾ cubic yard hopper, used one season. $3,200.00. Richard McFetters, 205 Atwell Ave., Greensboro, N.C. 27406. 919 272-6419.

FOR SALE: 2 Vermeer model TS 66 tree spades. 1 mounted on 1966 Chevrolet C 80 twin screw truck. 1 mounted on 1967 International L 190 twin screw truck. Both in good condition. Ready to go to work. Phone 605 398-6303.

FOR SALE Several 40 to 50-foot Skyworkers. One 32-foot working height Sky-jacker and truck. Phone: Aerial Lift Repair, Inc. 203 878-0695.

1973 SCOTT MIDLAND 5 ton crane. Mounted on 4 wheel drive International flat bed, 35 foot hydraulically telescoping boom with extra 10 foot extension and PTO. Sheets Tree Expert Company, Pittsburg, Pennsylvania. 412 241-1019.

FOR SALE: Bean Rotomist model 901, $2,-500.00. 303 774-1061.

FOR SALE: Beck 9-row Lawn-O-Matic plugger-sprigger, PTO drive, always shedde, like new. John E. Wolfe, phone 918 543-2414.

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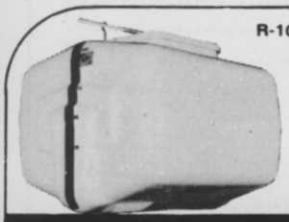

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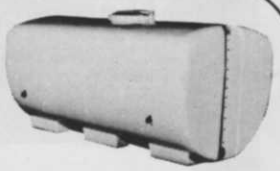

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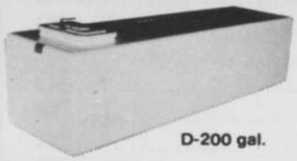

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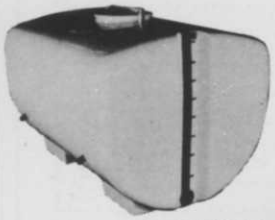

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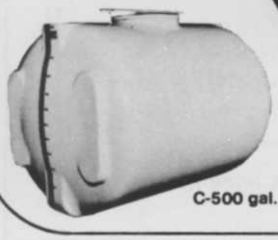

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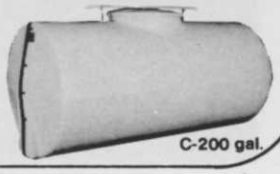

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Debris never had it so bad.

Beer cans, cigarette butts, twigs, bottles, matted grass clippings and rocks look pretty ugly on a beautiful turf.

But picking them up hasn't been all that easy. (Ever try to get hold of wet leaves in wet grass?)

Then along came Jacobsen's unique rubber finger pick-up system. You'll find it used on all six of our Sweeper models. They pick up just about everything that you'd call debris, including branches up to 3" in diameter.

Patented rubber pick-up fingers are the worst thing that can happen to turf debris.

Even wet leaves in wet turf.

Besides having incredible rubber fingers, our big 700 Series models sweep a 5-foot swath, and have hoppers with a hefty 5-cubic-yard capacity.

Our models 720 and 730HL are PTO driven. The 730HL has a hydraulic dumping system that saves labor and time by dumping directly into a truck instead of on the ground.

Our models 720E and 720E-HL come with 12 HP or optional 14 HP engines, and can be pulled by any vehicle. The 720E-HL also has a hydraulic dumping system.

Then, our smaller 154 Riding Sweeper and 154T Towed Sweeper both sweep a 48" swath, and dump manually.

Five sweepers have the optional Curb Broom that cleans up parking lots fast. And all models offer the Thatcher Thinner attachment that lets you thatch and thin turf while sweeping. Plus other options you might want.

To find out about the most complete line of Turf Sweepers

Hydraulic dumping feature of HL models can dump at any height up to 8½'.

being made by anyone, ask your Jacobsen distributor for details. What he has to say is bad for debris.

And that's good for you.

Jacobsen Manufacturing Company, Racine, Wisconsin 53403

JACOBSEN®

An Allegheny Ludlum Industries Company

Take a look at leadership.

"Tough K.C. Chiefs need tough grass! That's why I picked baron KENTUCKY BLUEGRASS."

George Toma, Director of Field and Landscaping Operations, Kansas City Chiefs and Royals, and consultant for all Super Bowl games.

"I need a grass that will withstand the wear and tear of forty big football players on it five days a week from August to December. With the toughness of Baron there are darn few worn out spots."

George Toma explains to Peter Loft:

"I overseed this practice field with 50 lbs. of Baron as early as February and the field is ready in April. We'll have good grass all the way through the season."

"With the field in use so much of the time, I need a grass that doesn't need much care. In the 3 years this field has been in, I've never used a fungicide, insecticide or herbicide. That's a plus for me. I can only water maybe once a week and you can see how green this field is."

"We fertilize well around Thanksgiving. With the lower fertilization requirements of Baron, we don't have to worry about tender grass. Baron stays tough."

"We mow whenever the grass needs it. That may be once, twice or even three times a week. We only remove ¼ of the growth and usually cut it to ¾" up until June 1. After that we keep it at 2"."

"The players love this field. They even replace their own divots! And I think psychologically they practice better when they see a beautiful field like this."

Lofts Pedigreed Seed, Inc.

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Ontario, Canada
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